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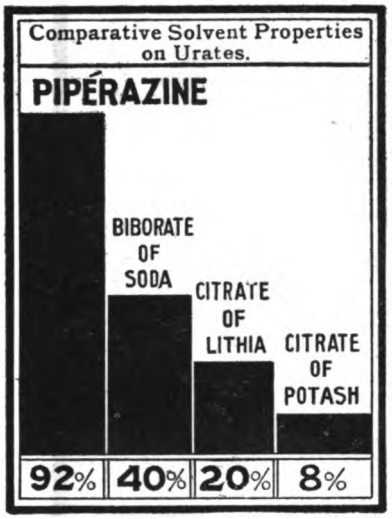


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## Address.

# IMMUNITY WITH SPECIAL REFERENCE TO VACCINE THERAPY.*

BY TIMOTHY LEARY, M.D.,
*Professor of Pathology, Tufts Medical School.*

IT is my purpose to review hastily the progress of our studies in immunity in order to make plain why that portion of the scientific medical world which has been interested in the *practical* application of immune principles to disease conditions welcomed the work of Wright as opening up a new avenue of approach toward the elucidation of a problem whose solution seemed impossible from the viewpoints which were held at the moment when his work was presented.

The student of pathology learns early in his career that the morphological tissue response to insults is limited to a few fundamental possibilities. Details of the reaction may be infinitely varied, but the basic variations are few, no matter what the character of the injury may be. Further, by artificial stimuli we have not succeeded in adding to the varieties of response which are exhibited against natural stimuli.

It seems to be equally true of immunizing responses to stimuli that the types of response are relatively few.

It should be made clear that the laboratory worker in immunity, when he makes a step in progress, does nothing new or strange. He invents nothing. He evolves no new principles. He studies nature and endeavors to wrest from her the secret of her methods of rendering harmless the parasitic organisms or their products which find themselves in the living animal body. Studies of immunity will be complete when we have laid bare all of these methods. The successful artificial method of attacking an infectious process depends upon as close an imitation as possible of nature's method of accomplishing the same thing.

Practical progress in specific therapy of human infectious processes really began with the discovery of diphtheria antitoxin. First came the demonstration that the diphtheria bacillus produced a soluble toxin; that bouillon in which the diphtheria bacillus had been grown for several days had acquired a definite poisoning power for animals even after the diphtheria bacilli which produced the toxin had been filtered off; that a measurable quantity of this bouillon, or diphtheria *toxin*, as it is called, would kill a guinea pig of a certain weight. Next came the discovery that an animal into whose body less than a fatal dose had been injected developed after a time the power to overcome what would be a fatal dose for an untreated animal of its weight. The injection of the non-fatal dose of toxin had stimulated the formation of an antitoxin. This antitoxin, produced in various tissues, is delivered into the blood stream, where it is found in the globulins of the blood serum. It was a simple practical problem to produce this substance in quantity in large animals, from whom large quantities of blood could be removed without harm, and the serum or its globulins made use of to supply the deficiency in antitoxin production in human beings undergoing infection with the diphtheria bacillus, or even to prevent infection in those exposed, by surcharging their tissues with antitoxin and thus making the ground unfavorable for the diphtheria bacillus.

It should be noted that diphtheria antitoxin has no important direct influence on the diphtheria bacillus. It acts solely by neutralizing the toxins of the organism, which, thus disarmed, falls an easy prey to other protective agencies.

The discovery of diphtheria antitoxin led to the hope that similar sera could be produced which would have as happy an influence on other infectious processes. It was soon learned, however, that few other bacteria than the diphtheria bacillus produce a soluble toxin in quantity. A study of infection with the diphtheria bacillus shows it to be an almost pure toxemia. The bacteria are limited to the local lesions in the throat. Here they manufacture their toxins, which are carried in the blood stream to all parts of the body, producing toxic degenerations of the so-called parenchymatous organs and the nerve trunks. The lesions which lead to death are thus produced largely at points distant from the region where the toxins are elaborated. The tetanus bacillus is the only other organism among the important pathogenic bacteria which produces mainly a soluble toxin and whose lesions largely arise at a distance from the bacteria, as in the case of diphtheria.

With the great group of other pathogenic bacteria, the story is a distinctively different one. General processes, when they arise, do so as a result of the invasion of the blood stream by the bacteria (bacteremia), and the organisms are carried to all parts of the body. The staphylococcus, streptococcus and pneumococcus, for example, depend for their activity in great part, not upon soluble toxins, but upon toxins (endotoxins) which are limited to the bodies of the bacteria. The problem in these cases is not the simple one of neutralizing toxins, but the more complex one of destroying bacteria as well.

Investigation has shown that bacteria which enter the blood stream may be destroyed by substances present in the blood serum which produce a digestion — a solution (bacteriolysis) — of the organisms. This phenomenon depends upon the interaction of two substances. The first of these is a specific body, — the so-called amboceptor, — a distinct immune body which may be increased in quantity at will in susceptible animals, just as diphtheria antitoxin may be produced experimentally in quantity. If this body were capable alone of the destruction of bacteria, our problem would be solved. Unfortunately, however, the actual destruction of bacteria (bacteriolysis) is dependent upon the interaction with it of a second body — the ferment which completes the solution of bacterial cells and which is known as complement. Complement is an unstable body, with little resistance to heat, and disappears rapidly

* Read at meeting of Rhode Island State Medical Society, June, 1910.

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from blood serum which is kept. It is present in the blood serum of all living animals, although its quantity may show marked variations. A slight disturbance, such as a headache, may diminish its quantity markedly, and we have discovered as yet no means of increasing the amount normally present to any considerable degree. Hygienic living, with abundant fresh air and good food, will keep its measure at a high par, but even under these conditions slightly untoward circumstances will rapidly lower the amount.

The individual who is undergoing infection with the typhoid bacillus, for example, is producing sufficient amboceptor for his needs. What his blood lacks is complement, and we as yet have no means of artificially supplying this need. Antisera rich in amboceptor may be readily produced, but the real need of the infected individual — complement — we cannot provide for.

For these reasons the so-called anti-bacterial or bacteriolytic sera are, as a whole, failures. An apparent brilliant exception, Flexner's anti-meningococcic serum, belongs in a class by itself because of the character of the meningococcus. This organism is one of a group of bacteria which undergo solution readily, probably even in the absence of complement. Rosenow has shown, and our own experience has confirmed this, that the group of organisms to which the meningococcus belongs will undergo solution in any normal serum, even in a serum which has little bacteriolytic influence on other bacteria, and sometimes solution of the bacterial bodies will occur in physiological salt solution. A specific serum against this organism belongs, therefore, in a special class and does not seriously modify the statement that bacteriolytic sera as a whole are failures.

Another method of dealing with infection was suggested by Metchnikoff's observation that the animal body protected itself in part against the invasion of pathogenic bacteria by means of active cell processes. He observed that, in the lower animals, certain infections were held in check or overcome by the action of motile cells, which took the invading bacteria into their bodies and destroyed them by a process of intracellular digestion (phagocytosis). The most active phagocytic cell in the human body is the polynuclear leucocyte. It was shown that the number of leucocytes in the circulating blood could be increased by the use of preparations containing nucleic acid. Substances such as yeast, rich in nucleins, were, therefore, used as a means of combating infection, but without marked influence on the processes.

Thus matters stood when A. E. Wright published his first practical results from bacterial vaccination. From 1892 to 1902, efforts in the direction of specific therapy had resulted in no signal advance. Our study of nature's methods had disclosed no new avenue of approach toward the solution of the problem, and we could not imitate nature successfully along the old ones.

The new facts which Wright brought out were (1) that the cellular destruction of bacteria (phagocytosis) does not depend solely on cell activity; that before bacteria are taken into the bodies of cells they must be acted upon by substances present in the blood serum (opsonins). White corpuscles washed free from serum are not attracted by bacteria with which they are brought in contact and will not, therefore, show phagocytic activity. The addition of a small amount of normal serum to the mixture of bacteria and washed white cells will be followed promptly by the familiar picture of phagocytosis.

(2) That the injection of suspensions of dead or modified bacteria (bacterial vaccines) into infected individuals would provoke the formation of antibodies more or less specific in character against the bacteria used for making the suspensions. The use of suspensions of modified bacteria in the *prophylaxis* of disease has been practised since the earliest years of bacteriology. The new step was the demonstration of their value in treatment of infections already established. The response to their injection is indicated not only by the formation of opsonins, but also by the production of other antibodies.

Wright's work has opened up a new world of possibilities in the struggle with infection. It is producing practical results in the treatment of infections which could not be hoped for a few years ago, and it has given the research worker a new basis from which to attack the problems of immunity.

### THE PRINCIPLES OF VACCINE THERAPY.

It should be said in the beginning that the opsonic index as a measure of the immunity response under vaccination is looked upon in this country as inaccurate. It requires a complicated technic, has many sources of error, and in our experience the results obtained are unsatisfactory. It has a value in the diagnosis of obscure conditions.

Wright believes that a proper therapeutic dose of vaccine in an infected individual is followed by a period of intoxication, accompanied by a diminution in antibodies (negative phase), followed by a stimulation of the immunizing machinery and the production of an increased amount of antibodies (positive phase). Theoretically, it should be possible to bring about the production of surges of antibody production, each wave higher than the preceding one, with progressive beneficial results to the infected individual. Wright, in his early work, insisted that, in order to provoke a positive response to vaccination, it was necessary to inject a sufficient dose to produce at first intoxication (negative phase). Our experience and that of others has shown that the ideal immunizing response can be produced without the toxic negative phase. Physiological doses of vaccines should be followed by an immediate production of antibodies without toxic action.

Wright believes that the individual who is undergoing infection with a carbuncle does not produce sufficient antibodies because the toxins of the staphylococcus are not being absorbed from the local lesions, owing to the disturbed blood vascular circulation and the obstructed lymphatic

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drainage of the infected region. Such an individual, however, has general malaise and frequently shows temperature, both of which should be accepted as evidence of toxic absorption. A more reasonable explanation, it seems to me, is that, while absorption of abundant toxic material is taking place, the character of the toxic material is not such as to stimulate the defensive forces. It is possible that there is some selective action in absorption, so that certain beneficial stimulating substances may not be taken up by the lymph stream from the focus of infection.

Another reasonable explanation rests on a belief in the local character of many immunity responses. It has been generally accepted that the immune bodies are produced almost wholly by the blood-making (hemapoietic) organs, and thence delivered into the blood stream. This theory fails to take into account the special immunity which certain tissues exhibit against infection. Most important among these are the muscles. Voluntary muscle is recognized as almost completely immune to tuberculosis, and undergoes infection with pus-producing organisms only after the intermuscular connective tissue has been overwhelmed. We recommend the injection of vaccines into muscle or into the intermuscular connective tissue. The satisfactory response which is obtained, we believe to be due in part to the awakening of the defensive metabolism of the muscle system by a stimulus differing in character from the toxic material absorbed from the local focus of infection.[1]

If the school of vaccine therapy does no more than to call attention to the muscle system as an important factor in the immune mechanism, it will have justified its existence.

Wright believes that an interval of at least seventy-two hours should elapse between inoculations of vaccines because of the toxic-negative phase following each inoculation. Early in our experience it became evident that, with proper dosage, the negative phase could be eliminated. The immunity response began to appear almost immediately following the injection of a physiological dose of vaccine. We have, therefore, shortened the interval between doses markedly, particularly in ugly local or in general infections.

Wright advocated the exposure of the suspensions of bacteria used in making vaccines to 60° C. for one hour for the purpose of killing. The immune response to the injection of vaccines is at least in part a specific one. This may be supplemented by more general phenomena (see staphylococcus below), but the object sought is an increased resistance to the specific organism which is producing the infection in a given case. Such an increased resistance means the formation of antibodies against the specific proteins of the bacterium. Bacterial proteins as well as others lose their specific character by exposure to high temperatures or by prolonged exposure to low temperature. We have, therefore, gradually shortened the time of exposure of such suspensions to a point where the organisms are just killed. We believe that our greatest contribution to vaccine therapy has been the modification of the killing method. Other methods of killing than by heat (galactose, ether, etc.) have since been advocated, in an effort to preserve the specificity of the bacterial proteins intact.

Staphylococcus Aureus vaccine, in addition to provoking the ordinary specific immunizing response, seems to possess the power of stimulating an increase in general resistance. Merrick,[2] who treated a series of infants suffering from furunculosis, calls attention to the fact that the children not only recovered from the boils, but their general nutrition became so improved after treatment that, from a condition of emaciation, they speedily became the best-nourished and most-resistant children in the institution.

### GENERAL INFECTIONS.

The objections to the use of vaccines in infectious conditions seem to focus themselves against their use in general infections. They will, therefore, be considered here. The general harmlessness of vaccines is indicated by the results in two cases of infection in which, through error, 10 ccm. of staphylococcus pyogenes aureus vaccine containing 10,000,000,000 organisms were injected at one time as an initial dose. This is forty times the standard initial dose. In one case no untoward symptoms appeared. In the second there was a temporary collapse, with prompt response to heat and stimulation. There are few powerful drugs in the Pharmacopeia which could be used with such disregard for dosage without serious results.

The most obvious objection to the use of vaccines in general infections is that the patient is undergoing extreme intoxication and that the injection of vaccines will but add to this intoxication. I have called attention to our theory of muscle immunity, and to the fact that physiological doses of vaccines are not followed by a toxic (negative) phase. The dose of vaccine used in pneumonia, for example, contains fewer organisms than will be found in a few out of the myriads of infected air sacs of the lung in this disease. The dosage is so infinitesimal, and its toxic effect is so slight, if any, that it is not measurable. As evidence that even much larger doses are at least harmless, I might cite the case of a child of seven years undergoing an infection with pneumonia, with a temperature of 103 and extreme meningeal symptoms, into whose body was injected as an initial dose, 8 ccm. of pneumococcus vaccine containing 1,600,000,000 pneumococci. The standard dose for adults is 8 minims, or 100,000,000 pneumococci. This child receiving sixteen times the adult dose of vaccine not only did not show harmful results, but began to mend shortly following the initial injection and recovered under daily injections of several times the usual adult dose. A second child with pneumococcus meningitis showed prompt diminution

[1] Since this paper was read, Theobald Smith, in a paper on "The Experimental Basis for Vaccine Therapy," read before The Massachusetts Medical Society, June 8, 1910, called attention to the possible local character of immune body production, and suggested vaccination in different sites as a means of awakening these local mechanisms.

[2] Ann. Gynec. and Pediat., September, 1908.

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in the number of pneumoccoci in the cerebrospinal fluid, and sharp amelioration of symptoms accompanying the use of four to eight times the standard adult dose of pneumococcus vaccine. Death occurred from exhaustion, the meningitis having followed a series of children's diseases with bronchopneumonia,

Another objection offered to the use of vaccines in general infections is that vaccines stimulate the production of bacteriolytic substances and that these substances may kill many bacteria and set free their toxins, thus overwhelming the body with toxic products. Flexner's antimeningococcic serum is a bacteriolytic serum about whose value there is little question. It is injected into the subdural space of children who are suffering from extreme intoxication with the meningococcus and its products in a region which is most sensitive to these products. Its injection is followed by the immediate action of its bacteriolytic substances on the meningococci with which they come in contact. Examination of the fluid shows a prompt and extreme diminution in the number of meningococci, and yet I have never seen reported harmful results related to the sudden setting free of their toxins. Following the injection of vaccines, the theoretical evolution of bacteriolytic substances, if occurring, must take place slowly and gradually. There is not an explosive setting free of these substances such as the injection of meningococcus serum brings about, and the effect, if any, must be less than that shown in meningitis, which is practically negligible.

It may be argued that Flexner's serum contains anti-endotoxins capable of neutralizing the toxins of the meningococcus when set free. If this is true, it is the first practical anti-endotoxic serum which has been produced (Besredka's anti-endotoxic typhoid serum has only experimental interest) and Flexner makes no claims of anti-endotoxic properties. Even though such claims are made, the prompt recovery of a child into whose subdural space normal horse serum was injected in an emergency when Flexner's serum could not be obtained would suggest that danger from products of bacteriolytic action is not serious.[3]

A third objection is that patients undergoing infection are in an anaphylactic state; are, therefore, hypersusceptible to intoxication. With chronic infections such as tuberculosis this danger apparently exists, and for that reason I believe the use of tuberculin in treatment should be carried out with extreme care. We have never seen evidence of its existence in the acuter conditions produced by other bacteria. It takes time for the establishment of anaphylaxis, and the general infections with their sudden onset should be largely free from such danger. Anaphylaxis is a purely theoretical danger, as is evidenced by the infrequency of serious results following the use of diphtheria antitoxin. If guinea-pig experiments with horse serum gave a true picture of what was to be expected in human beings, the use of diphtheria antitoxin would be so limited on account of anaphylaxis that its value would be very questionable. As I have said elsewhere, theoretical considerations of this sort must yield to the facts of experience.

[3] Personal communication, Dr. S. P. Beebe.

### DISTINCTION BETWEEN GENERAL AND LOCAL INFECTION.

The old belief in bacteriology was that there was a sharp dividing line between general and local infections. More recent work has demonstrated that such a line does not exist. Every case of typhoid fever is a general infection, as is every case of pneumonia, endocarditis, meningitis and most of the acute septic processes. It has been demonstrated that every case of erysipelas starts in as a general infection. Recovery from these conditions is brought about, first, by the localization of the infection and then by the destruction of the bacteria in the local focus.

In streptococcus general infections French workers found that the injection of turpentine into skeletal muscle, if successful in provoking a local abscess, was associated with the focalization of the infection, which could then be handled as a local process. If the patient's condition were such that local abscess formation did not occur, then the treatment was not successful.

Our grandfathers, probably with the same end in view, thrust setons through skin, subcutaneous tissue and muscle with apparently similar results.

Some of our results with general streptococcus sepsis were illuminating in much the same direction. We were given opportunity to treat cases of puerperal sepsis in which all clinical expedients had been exhausted and in which the outlook was hopeless. In a number of these cases a prompt drop in temperature followed the exhibition of vaccine. In this group I am somewhat skeptical as to the influence of the vaccine, since other factors may have played a part. In many of the other cases there was a progressive forcing downward of both pulse and temperature, which reached normal after several days. In certain of these cases local formation of pus, either in the uterus or else in muscle or subcutaneous tissue, occurred from one to three days after the temperature had reached normal. The further treatment of these cases consisted in the simple problem of caring for a local infection.

The localization of a general infection following the injection of turpentine into muscle by the French, the introductions of setons according to the older surgery or the injection of specific vaccines according to the newer procedures, first drew our attention to the apparently important part which local defensive mechanisms, and notably muscle, played in increasing general resistance.[4]

It is not my intention to speak of the use of vaccines in pneumonia until we have carefully collated the data obtained from reports of work

[4] I do not want to be misunderstood as claiming that we have solved the problem of streptococcus general sepsis. We believe that we have saved many cases of puerperal general sepsis which otherwise, according to the best views of able practitioners and consultants, would have died. Some cases, notably those whose resistance was gone, have died. In cases where the resisting mechanism was still capable of stimulation, the use of an autogenous vaccine killed at 60° C. for fifteen to twenty minutes, and injected at frequent intervals in physiologic doses, has furnished remarkably good results, and we have never seen evidence of harm.

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during the past year. We have furnished pneumococcus vaccine for about fifteen hundred cases, but in spite of the fact that we made the reports so simple that a few minutes would suffice for recording the desired data, the return of these reports is slow. The evidence seems to predominate that this vaccine is a distinct addition to our armamentarium.

LIMITATIONS OF THE VACCINE TREATMENT.

Vaccine treatment in surgical conditions does not do away with the necessity for intelligent surgery. In an accumulation of pus the opsonins and other antibodies which are formed in response to bacterial vaccination cannot be delivered from the blood stream into the pus. In thick pus currents are sluggish or absent and the transmission of antibodies into the central part of the mass of pus must be interfered with. Contact with the bacteria is prevented and, therefore, the organisms are unaffected. It is essential that drainage be established. If this is done, the bacteria along the granulating wall will be quickly destroyed and healing be more rapid than surgical measures alone could bring about. Vaccine therapy does not supplant, but supplements, intelligent surgery.

With infections in certain locations, particularly along some mucous surfaces, vaccine therapy is less successful than elsewhere. Gonococcus vaccine, for example, has little influence on urethral infections in our experience, but a freshly prepared gonococcus vaccine made from first cultures from fresh cases gives such prompt and constant results in gonorrheal rheumatism that we are led to doubt the diagnosis in cases which do not respond. Our doubts have been justified in all cases which did not respond in a considerable series.

In infections of the kidneys, where there is a local irritant in the form of a stone, or where drainage is interfered with, vaccine treatment has little value. If the colon bacillus is the infecting agent, intoxication will be relieved and fever eliminated, but local infection will persist.

In the bladder, if residual urine is constantly present, vaccine therapy is only palliative, since the chronic irritation of the bladder mucosa by products of the saprophytic bacteria usually present will favor the continuation of the process.

In bacteriuria, vaccines have little value. Bacteriuria is marked by the growth of organisms in the urine, as in a culture medium. There is no infection. The bacterium and the human being are growing in harmony. No means of breaking this symbiosis has as yet been discovered for most organisms. Infection, if it exists, can be overcome, but the symbiosis persists.

NECESSITY FOR RESISTING ABILITY.

Diphtheria antitoxin confers a passive immunity. It requires the patient only to furnish a circulation for its distribution. When it comes in contact with diphtheria toxin, it neutralizes it without assistance from the patient. The defensive mechanism of the patient is left free to cope with the diphtheria bacilli at the point of infection.

Bacterial vaccines require the active co-operation of the patient. Vaccines, as far as we know, accomplish nothing directly except to stimulate the lagging immunizing machinery to produce needed antibodies. It is, therefore, essential that the defensive mechanism be in condition to respond to this stimulation if good results are to be obtained. For lack of this preparedness, fulminating cases of streptococcus peritonitis, for example, in which the septic absorption is extreme, do not usually respond to treatment, while slower infections do.

PRACTICAL APPLICATION.

It is not possible nor desirable to go into detail about practical procedures in this rather lengthy paper. Suffice it to say that the group of infections for which the average practitioner desires to use vaccine therapy, while comprehensive, is due to the activity of relatively few organisms. *Staphylococcus* vaccine is now accepted as the standard method of treatment of local conditions due to this organism. In general infections results are less satisfactory because, I believe, such a general process is usually a pyemia, and the organisms in a pyemia are contained in masses of clot and less accessible to the antibodies which may be formed.

Of *streptococcus* general infections I have spoken. Among local infections, erysipelas responds in most cases with promptness. This is particularly true if an autogenous vaccine can be obtained. Local septic processes also respond promptly.

The empirical use of vaccines made from autogenous throat cultures, and containing usually a mixture of the pneumococcus and streptococcus, has given usually prompt relief of pain and a bettering of other symptoms in a large percentage of the cases of rheumatism treated.

The treatment of the associated infection in tuberculosis with autogenous vaccines in which the streptococcus and pneumococcus usually predominate is accompanied by diminution of temperature and relief of cough and night sweats, followed by increase of weight.

*Pneumococcus* and *gonococcus* processes have been mentioned.

The frequency with which *B. coli* is an infecting agent has only been fully appreciated since vaccine therapy has been inaugurated. The colon bacillus may give rise to marked toxic symptoms from a relatively slight infection. Such intoxication can be relieved usually within a few hours. Genito-urinary infections due to this organism have been considered. The response in bladder infections, where well drained, is rapid and permanent where re-infection can be guarded against. In typhoid fever the so-called exhaustion which arises in the late stages and which leads frequently to a fatal issue is apparently due to B. coli infection. An autogenous vaccine made from the feces has in three cases with us been followed by a prompt disappearance of the septic temperature and rapid progress to convalescence. In membranous colitis an amelioration of symptoms persists while the vaccine is used, but prompt relapse usually follows its withdrawal. B. coli vaccine prepared from the urine of cystitis asso-

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ciated with rheumatism or rheumatoid conditions has not only cleared up the cystitis, but has also relieved the rheumatoid symptoms promptly in a small series of cases with us. B. coli vaccine should always be prepared directly from the patient's organism and should be used in small doses. The initial dose should not be more than 25,000,000, cautiously increased.

*Tuberculin.*—No final judgment of the value of any agent used in the treatment of tuberculosis can be made unless its practice has been followed for many years. I am, therefore, only hazarding an opinion of the value of tuberculin from our limited observation. I believe that tuberculin in proper doses is a valuable addition to standard methods of treatment. Its use, however, is associated with dangers which make extreme caution necessary in its exhibition. Wright's method, which calls for an extremely small dose at weekly intervals, seems to eliminate all dangers of over dosage.

I hope that the time is not far distant when local laboratories will properly develop the field of vaccine therapy. The observer in this field requires an accurate and extensive knowledge of the small group of organisms which play a part in most infectious processes. With this mental equipment a knowledge of the technic of vaccine production and therapy can be quickly developed. There is no reason why autogenous vaccines cannot be produced in the larger hospitals and medical centers of the community. I look forward to the day when an equipment in this direction will be expected of the local pathologist and bacteriologist.

Vaccine therapy is in its infancy. It is but a step in progress toward the specific therapy of infectious processes for which the medical world has been anxiously waiting. I trust that I have made clear my reasons for believing that, through the new viewpoint it has opened, a way to the solution of these problems may be made possible.

## Original Articles.

### TYPES OF GRAVES' DISEASE.

BY J. G. MUMFORD, M.D., BOSTON.

The types of Graves' disease are so various, and the special symptoms, or lack of symptoms, so puzzling, that it is well for a student of the subject frequently to compare cases, especially that he may bring home to himself the possible and serious outcome of conditions which often appear trivial and more often are obscure. Frequently it happens that the frank, acute cases, with the classical symptoms, are cured by any treatment, and by no treatment even. Sometimes it occurs that a case apparently trifling, perhaps running an easy, chronic course, suddenly becomes worse and dies in spite of all treatment.

Here are two dissimilar cases, a typical case and an atypical case, both of which occurred in my practice, both of which caused me the greatest anxiety and taught me new lessons regarding the nature of this interesting ailment.

Case 1 was that of Mrs. A. S., a woman of forty-two. She had behind her a long surgical history, — operations for salpingitis, for retroperitoneal cyst, for ovaritis, — but in spite of these serious diseases and operations, which occupied many years of her younger life, she came out strong and vigorous. At the age of thirty-seven, however, she consulted her physician for what appeared to be a trifling heart lesion, for she found herself troubled with occasional dyspnea on exertion. Her physician discovered a slight mitral leak and some dilatation of the heart. Careful treatment and prolonged rest resulted in no benefit; gradually there developed further a constant distressing dyspepsia, pain and nausea after eating and a state of continual apprehension. These symptoms persisted for two years, when there developed further a mild, bilateral tremor of the fingers. At this stage she consulted me, on the advice of her physician, and I was able to suggest the diagnosis of exophthalmic goiter. Even so, the diagnosis was by no means assured, for no enlargement of the thyroid was evident, nor were there marked eye symptoms, while the heart rate rarely went above 80. We continued to treat her as a cardiac case only — bearing in mind the possibility of Graves' disease — for another year, when within a month there developed a series of characteristic symptoms: the thyroid gland became enlarged, with a typical thrill; the eyes gradually became prominent, with lagging of both lids and widening of the palpebral fissure; and tachycardia became pronounced, the rate of the heart ranging between 110 and 130.

Here was a case which, in spite of its gradual onset, seemed suitable for immediate and vigorous medical treatment. Accordingly, we instituted the use of hydrobromate of quinin, neutral, in 5-gr. capsules, three times a day, and continued the medication without intermission for fifteen months. During the early months of treatment the patient experienced great relief; her apprehension vanished, her thyroid tumor became somewhat smaller, the heart action became slower and her general sense of improvement marked. Such was her state twelve months after the beginning of the quinin treatment. She was not well, however, and her condition of instability became especially apparent at that time through the accident of a serious grief; a favorite sister became ill, and, after a month's extreme suffering, died, under the constant watchfulness of our patient. The strain and anxiety of this experience renewed at once, and markedly, the exophthalmic symptoms. Within a very few weeks, from the state of quiescence I have described, all her discomforts reappeared; the eyes became prominent and anxious, with their associated abnormal lid phenomena; her tachycardia returned; the heart became irregular; dyspnea became extreme; she was troubled with a constant diarrhea and distaste for food; profuse sweating became pronounced; the tremor returned in force; and the right lobe of the thyroid rapidly doubled in size.

Now the case presented all of the typical

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symptoms of acute Graves' disease and demanded, apparently, most energetic treatment. Fortunately, during the whole of this period she had been under constant medical care and I had seen her myself once a month for more than a year. The hydrobromate of quinin appeared to be no longer useful, and, in view of the rapid development of her acute symptoms, it seemed wise to me to undertake a radical operation; at the same time, in view of her alarming psychic state, I made every attempt to bring her to the operation in a calm frame of mind. I believe firmly in the value of Crile's suggestion regarding psychic influences in acute Graves' disease, and in the importance of bringing the patient to operation practically without her knowledge. In the present case I followed the plan which I always institute in similar acute cases. The probability of our doing an operation was explained to the patient and her consent to it was secured, as well as the consent of her relatives, but the exact time of the operation was not set, nor was the operation explained to her as inevitable. I sent her to a quiet private hospital, confined her to her room, with a congenial nurse, and kept her there, resting and closely observed, for ten days. She spent her time in bed. I was able to relieve the sleeplessness from which she suffered by the liberal use of bromide of strontium, and, through the inhalation of various volatile oils and colognes, to suggest to her the possibility of improvement. During those ten days she was treated every morning by inhaling either nitrous oxid, eucalyptus, alcohol, spirits of camphor, ether or cologne, all in small, harmless amounts and freely mixed with air. In this way she acquired the idea of taking inhalations without the slightest terror or distress.

The principle of this treatment, as enunciated by Crile, rests on the following proposition: We know that the acute phenomena of Graves' disease are due to the abundant outpouring of the thyroid gland secretion into the lymphatics and so into the general circulation; we know that this outpouring can be increased by such stimuli as fear, anxiety and even mirth, but fear and anxiety are especially deleterious. Clinical evidence shows that the ordinary preparation for operation and the giving of ether have, through the stimulus of fear, more than once killed a patient, from the sudden resulting outpouring of thyroid intoxicants, without any operation having been done. If, then, we can bring the patient to the operation, can produce anesthesia and can operate without altering the equanimity of the patient's mental attitude, we are convinced that we then operate under the most favorable conditions.

I followed this method with the patient under discussion. On the morning set apart for the operation she realized no change in the ordinary routine. She was, indeed, given a hypodermic of morphia, but she had been given hypodermics of sterilized water daily, so that a hypodermic of morphia impressed her mind not at all. An hour after the hypodermic, when she was in a calm and untroubled state, I myself, as had been my custom, entered her room and proceeded with the anesthetic, giving her first a few whiffs of cologne, then an abundant inhalation of nitrous oxid, with a little oxygen, and then, when consciousness was gone, had the anesthesia carried on by ether. This was more than a year ago. My present custom is to carry the patient through the operation with nitrous oxid and oxygen, as I am convinced that thus her resistance can be kept nearest to its normal. The patient was carried, anesthetized, to the operating room, and these interesting facts were noted. Before taking her anesthetic her pulse had been 110; when completely anesthetized her pulse was 112; during the removal of the gland her pulse varied between 100 and 110; half an hour after her return to her room, and while recovering from the anesthetic, her pulse reached 120, but three hours later it had fallen to 90.

This is in notable contrast with the ordinary experience of bringing a terrified patient to the operation, when during that operation we note a steadily rising pulse and a condition often of great gravity before the recovery from ether.

The operation itself in the present case was a simple one; it consisted in removing the left lobe of the thyroid, stripping the posterior capsule after the method of C. H. Mayo, in the removal of the isthmus and the removal of about one third of the right lobe.

After the operation, and with the patient's recovery from ether, all acute interest in the case ceased; though one was struck, as one always is in satisfactory cases, to observe her rapid and complete recovery of health. The first noticeable change was the loss of peevish irritability which had characterized her before. She was relatively calm and tranquil after the operation, and two days later had ceased entirely to complain of any operative sore throat and pain in her neck. Coincidently, one observed a steadying of the pulse and a gradual decline in its rate; the tremor also abated rapidly; dyspnea was never again observed; the sweating disappeared, and at the end of ten days her digestive disorders were greatly improved. The wound healed promptly and never disturbed us. The most noticeable fact, however, about this case, as about all successful cases, was the calm, tranquil and happy attitude of the patient herself. One may not in words clearly define this change, but it is so rapid and so striking in all successful cases that it suggests the relief brought by the timely and appropriate use of morphia to a person in pain and terror. It is the reverse of euthanasia; it is the confident return to a cheerful and comfortable life.

The operation I have described was done some eight months ago, and I have seen the patient four times since she left the hospital. It is too early as yet to pronounce her permanently cured; indeed, one symptom still remains, a slight exophthalmos, but in all other respects she appears and feels absolutely well and goes about her work in life with a vigor and a cheerfulness which she had not known for five years.

This case, in its later developments, was a

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typical acute Graves', and in its ready yielding to treatment illustrates admirably the value of operation in proper cases. In no way was it especially remarkable except in the long and gradual onset of the symptoms and in the sudden accession of serious symptoms on the experience of a depressing grief.

Case 2 was atypical: Mrs. T. B. was a vigorous young woman, of active habits, some thirty-two years of age, and the mother of four children. With the exception of her obstetrical history, there was nothing in her past life of any special significance. She had always been regarded as peculiarly sane and well-balanced. Some two years before I saw her she suddenly became extremely nervous; within a week she took on symptoms that suggested to her physician a rapid neurotic breakdown; she was sleepless, fretful, irritable and almost impossible to live with, as her friends asserted. Within a week after the surprising development of these symptoms her physician discovered a marked tumor of the thyroid gland. There was no other evidence of hyperthyroidism, with the exception of the nervousness; there was no exophthalmos, no tachycardia or palpitation, no tremor, no digestive disturbance, no sweating; in fact, the diagnosis was founded almost solely on the nervousness and the rapidly enlarging thyroid.

This patient's physician had the courage of his convictions, and his convictions were sound and accurate. Without stopping to employ drugs, and without waiting to see the development of the case, he proceeded at once to a surgical operation, and his surgical activity seems to have been justified by the results. He removed the whole of the left lobe of the thyroid, leaving, however, the isthmus, with a considerable pyramidal lobe, and the whole of the right lobe. The lobe removed was much the most affected; those parts which were left seemed to be but slightly hypertrophied.

Mrs. B. promptly recovered from the operation and promptly recovered her normal health. Her nervousness disappeared, and her usual cheerful and equable temperament was restored to her. Her husband's later account to me of the year which followed was encouraging, if it had not been pathetic. At any rate, the operation showed brilliantly the immediate benefit of cutting out a greatly active gland which obviously was pouring toxins into the patient's organism. Mrs. B.'s after-history, however, was stormy and instructive. Her symptoms of hyperthyroidism gradually returned after a year and became more settled and more pronounced than before. Not only was she the victim of an intense nervousnses on this second occasion, but she developed many of the classical symptoms of Graves' disease; her eyes became prominent, with the usual associated lid symptoms; the remaining lobes of the gland became enlarged to about four times their normal size; tachycardia developed, though not in an extreme degree, but her pulse came to range between 100 and 110; she became the victim of dyspnea and palpitation, while her digestive disturbances were poignant, — pain after food, eructations and constant diarrhea, — associated also with rapid emaciation. Such was her condition when she consulted me, some fourteen months after the first operation.

I endeavored for some two months to relieve her symptoms and to build her up by the use of hydrobromate of quinin, but at the end of eight weeks she was but little improved, and the outlook began to appear very serious. Meantime, her husband and her physician, who had performed the first operation, both urged me strongly to proceed with a second operation. It was evident to all concerned that the failure of the first operation to effect a cure was due to the incompleteness of the work. It was said, with apparent justice, that much more of the affected gland should have been removed. At this time, that is to say, immediately before my own operation, which I undertook with some hesitation, the patient, while extremely ill in the thyroid sense, seemed to be an excellent surgical risk. She had herself well in hand and exhibited little of the terror and perturbation which these people usually show when an operation is anticipated; indeed, it did not appear to me that my usual course of psychic treatment was indicated; the patient was so perfectly familiar with her coming ordeal, and so keenly intelligent about preparing for it, that I thought it best to consult her about the day and the circumstances of the operation.

On the appointed day she walked to the operating room herself to take her anesthetic, and appeared reasonably placid. Her pulse was 106, of fair quality, but slightly intermittent. There were no evidences of degenerative changes in the heart or nervous system, though a slight, hemic, mitral murmur was obvious; the heart, however, was not enlarged. I anesthetized this patient with gas and oxygen with the greatest immediate success. The combination of these agents is usually peculiarly effective in cases of Graves' disease. At the same time, in order to block, so far as possible, the effects of hyperthyroidism, I followed the suggestion of Crile and infiltrated the skin about the tumor thoroughly with a 1% cocaine solution. I found the operation of thyroidectomy in this case unusually difficult. The previous operation had had the common effect of filling the operative field with extensive and dense scar tissue, through which there was an abundant blood supply. The dissection was most painstaking and bloody, though the total amount of hemorrhage or of blood lost was inconsiderable, I am convinced. At one time I counted 47 hemostatic forceps in the field of operation, and I am sure there must have been twice that number before the operation was completed. All this, of course, shows the difficulty of the operation and its length. The thyroid lobes seemed everywhere closely adherent to the surrounding structures. I found the stump of the old left lobe which had been removed, and proceeding thence I took out the somewhat enlarged pyramidal lobe and about half of the enlarged right lobe. I assured myself by this method — that is, by slicing laterally the right lobe — that the parathyroid glandules were

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not disturbed. To the same end, the blood vessels were seized and controlled within the substance of the gland itself. The operation occupied about thirty-five minutes and was extremely tedious; the patient bore it well, however; her pulse rose but little, and while the stitches were being put in, it was counted at 112. While she was recovering from the anesthetic, that is, fifteen minutes later, her pulse had sunk to 100, and all promised well.

Every reasonable operative precaution had been taken to avoid increasing the hyperthyroidism. In spite of the dense adhesions about the gland, that organ had been handled very little, while after the operation abundant drainage was provided. Even so, one recalls with interest Crile's assertion, based on numerous investigations and experiments, that the escape of thyroid secretion during the operation has little or nothing to do with post-operative hyperthyroidism.

Trouble began immediately after our patient was put to bed. She was the victim of an intense and prolonged nausea, vomiting frequently and painfully for twelve hours. She awoke to consciousness in a state of excessive irritability, throwing herself about the bed, demanding to be taken up, crying out for the nurse every two or three minutes, continually asking for ease from her discomfort, a discomfort which she failed to describe; her apprehension became painful and extreme, her agitation seemed almost maniacal, and her former tranquillity was so far abolished that she complained bitterly and continually of her attendants and of the nature of her treatment. She bewailed the fact that she had submitted to a second operation, and assured us continually that she was about to die. At the end of twelve hours the reasonably slow and steady pulse had risen irregularly to 130 and 140, the heart action became embarrassed, intermittent and irregular; a rapid cardiac dilatation supervened; the patient was bathed in sweat; her exophthalmos became exaggerated in appearance and her misery became almost indescribable. In other words, here was presented a picture of extreme and grave thyroid poisoning, such a picture as one sees in the most advanced cases of Graves' disease immediately before death; indeed, death was imminent in the case of this unfortunate patient. I attempted in every way to relieve her misery by the use of appropriate drugs, but the rapid deterioration of her heart seemed to render them ineffective; opium alone gave her some slight comfort.

The situation was such as we used commonly to encounter after operating for Graves' disease two or three years ago, before the present effective technic had been devised.

The patient sank rapidly under her accumulated sufferings and died some thirty-six hours after the operation. She died of acute hyperthyroidism.

The case in its development and in its early features was conspicuously atypical, and although during that interval between the first and second operations characteristic symptoms accumulated, so that the case became almost classical in its appearance, still the condition at no time was regarded as serious. One cannot but ask oneself what would have happened had no operation been done. In spite of the futility of this question, one cannot but feel that had no second operation been done, the patient must have continued on the edge of a volcano, and that at any time, almost, some slightest excitement or stimulus might have thrown her into a state of advanced hyperthyroidism from which she could not have been rescued. Looking back at my own relation to her illness, that is, during the last two months of her life, and at the course followed, I believe now that I should not have dallied with drugs, but should have followed the example of her first surgeon and operated immediately after she consulted me.

The two cases which I have related, eventually and pathologically, were cases of frank, acute Graves' disease. There was no evidence in the thyroid lobes removed that any retrograde changes had as yet begun in those organs. It is to such retrograde changes, with their associated symptoms, leading in the last event to the antipodes of Graves' disease, to an actual myxedema, that the physician must often look for spontaneous cure of hyperthyroidism. Neither in the case of Mrs. S. or of Mrs. B. were such changes evident.

These two cases, little as they resemble each other, illustrate that great class which should be treated by early thyroidectomy.

## HYSTERIA — WITH AUTOPSY.*

BY WILLIAM R. WOODBURY, M.D.,
*Head of Department for Nervous Diseases, Boston Dispensary;*
AND
CARLISLE REED, M.D.,
*Assistant Physician in Nerve Department, Boston Dispensary.*

In January, 1909, a young colored girl, seventeen years old, came to the Nerve Department of the Boston Dispensary. She came reluctantly with her mother; and this is the story they brought:

At two and one-half years of age came her first sickness: she had whooping cough. For six to eight weeks she was very ill. It was nearly a year before there was full recovery. Then followed immediately measles, which was not a particularly severe illness. When she was five and one-half years old she was vaccinated. The first vaccination did not take. The second vaccination took. Up to this time the skin of her entire body was perfectly clear. A rash appeared with the vaccination and the swelling of her arm. From head to feet the entire body was covered with "white boils." These in healing left permanent white marks on her colored skin. These white spots distressed the girl greatly when she began to attend school — at six years of age. During the following two years she was taken to the Carney and Homœopathic hospitals, but she was never cured. Her body and scalp had a scaly eruption which was white, dry and did not itch. At times the eruption appeared to be gone; then it would return.

At eight years of age she had tonsillitis. She was in bed ten days. Following the tonsillitis appeared for

* Read at a clinical meeting of the staff of the Boston Dispensary, May 6, 1910.

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the first time her "bladder trouble," which the mother said began "with a constant desire to pass her water." This "trouble" was continuous the next one and one-half years. At the Carney Hospital "kidney trouble" was suspected, and the doctor wanted the girl to go into the hospital. She refused, and she cried, and her mother took the girl home. From that time (eight years of age) to sixteen years of age she made no complaint of "water trouble." Menstruation began when she was fifteen years and two months old — in February.

At sixteen years of age she weighed 118 to 123 lb., and it was generally remarked how well she looked. In December of her sixteenth year she went to visit her grandmother, who lived in a nearby city. The visit lasted one week. On her return Lucinda began not to seem well. She complained of being tired, and her "water trouble" became constant. As soon as the bladder was relieved the desire to urinate returned. She said, "I always felt as though there was a drop more that I could not get rid of; it was always irritating." Her disposition began to undergo a complete change. She grew more irritable; she was peevish; she was easily annoyed; and she became less unselfish. She began to lose in weight, and from that time on her weight steadily fell away.

The physical examination discovered a fairly well-developed but poorly nourished body. The skin, save that of the face, carried a general psoriasis. Where the psoriasis had healed and the scales had come off were white scars which showed prominently on the dark skin. Above the pubes was a slight tenderness. The heart and lungs were normal. The girl refused to answer questions, but when pressed she would break her silence only with a whining, "Mamma, you tell him; mamma, you tell him." During the time we were getting her history and making the physical examination she insisted on going to the toilet three times. Her mind seemed centered on her bladder; she would continually say, "My bladder," — nothing could get her attention away from it. She depended absolutely and always on her mother to do everything for her. The girl demanded constant service night and day. She insisted on keeping her mother with her all the time; she compelled her mother to sleep with her.

If any one was about at meal times she refused flatly to eat. A member of the family said, "Lucinda liked to eat, but she hated to have any one know it." When in bed she would eat under the sheet so as not to be seen eating. Analysis of her urine revealed nothing to be remarked.

During the year previous to coming to the Dispensary the girl was under the care of a number of physicians. At one time she was in the Vincent Hospital for a period of two or three months. While there she urinated at intervals of from every fifteen minutes to every three hours. Some kind of treatment was given for the bladder, but nothing was discovered, no relief came. After that she became a patient at the Emmanuel Church Clinic.

From January to Aug. 4, 1909, we kept in closest touch with the patient at the clinic and in her home. She came with her mother to the Nerve Room at regular and frequent intervals, but she always came most reluctantly, — under vigorous protest, — and she showed much vigor and no little determination in her conduct towards us. Our Medical Social Service visitor saw the girl, her mother and the family frequently in their home. We all endeavored to stimulate the girl to try to do something for herself, to want to do for herself. Our efforts singly and combined met with no success. When her mother returned to her own bed and locked her door, Lucinda would spend the entire night between going to the bath room and sitting crying at the head of the stairs opposite her mother's bedroom door. The girl would eat only after much urging, and then she ate very little. Naturally she grew steadily weaker, and was losing in weight, but her endurance held good. "Lucinda says she will jump out of the window" was the message which came one day from her excited mother. Upon the information that the window was in the second story, the mother was told to tell Lucinda that she might jump if she wanted to. This closed the window incident. The girl made no more mention of the subject.

On the 17th of April she was taken into the Milton Convalescent Home. She was to stay there three weeks. The third day after being admitted we were requested to have her removed at once. She cried and raised such a rumpus generally that the interests of the other patients demanded her speedy departure.

Dr. Edgar Garceau saw the patient at his office, by appointment, and gave her a painstakingly careful examination. His report was:

PLEASE FILL OUT THIS CARD AND RETURN TO
SOCIAL SERVICE DEPARTMENT
NO. { *Nerve Room* / *2456* } BOSTON DISPENSARY
COR. BENNET AND ASH STREETS

FOUND *Extreme emaciation, anemia. Contracted bladder. Hyperemia of trigone and vesical neck. Hyperemia of the kidneys (calcic oxalate and diminish amount). There was so much emaciation that I suspect deep-seated disease (adrenal tumor?).*

RECOMMENDED *Advise against bladder treatment now. Better rest a while and return for examination later.*

DATE *May 11, 1909.* (SIGNATURE) EDGAR GARCEAU.

The girl's condition was not improving; she was steadily becoming weaker. Nothing would stimulate her into any effort; she continued, and strenuously, her tyranny over the family. In July she was taken to Nova Scotia to visit some family friends. Her mother remained at home — she was compelled to help meet the family living expenses. Lucinda knew this, yet she moaned and so carried on that in a few days an urgent telegram came to her mother to come at once and take the girl home; she was in bad condition. The girl had refused all food for the entire ten days. She had taken only two quarts of milk and a few caramels, and she sat throughout those ten days in one position, her favorite one, with her right leg doubled up under her.

On her return she went to bed and there on Aug. 4 she was seen at her home. Her emaciation was much more advanced; and she complained of a numbness and inability to move her right foot — a pressure paralysis resulting from her ten days' sitting on that leg. Physical examination revealed nothing else. It was necessary to force her to take food. She would eat candy and cookies, but nothing else. Her silence was still sphinx-like. During the remainder of August, September and up to Oct. 8 the usual condition continued, but naturally the emaciation and physical weakness were advancing. She was a mere skeleton. On Sept. 28 her grandmother died. The mother left the patient — who had demanded her constant attendance day and night — and she made no remonstrance against the mother going to the nearby city where the grandmother had died. The grandmother's death seemed to bring the girl back into a state of reasonableness, and she ate willingly; she was less tyrannical.

At four o'clock of the afternoon of Oct. 8, the girl was seized with a violent attack of coughing which lasted until nine o'clock in the evening. She said there was something in her throat which she could not get

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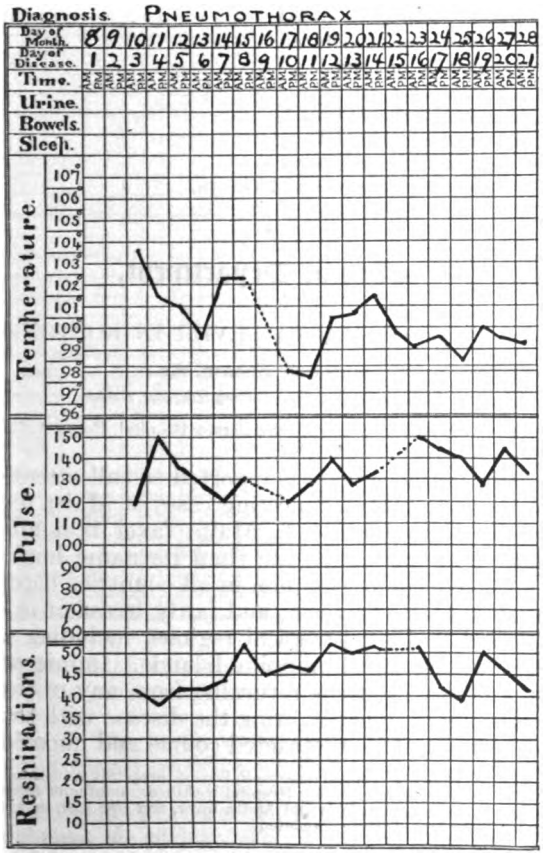
up. Suddenly she cried out and fell out of the chair to the floor, but she complained in no way of being hurt. An examination of the throat discovered nothing; but there was found a left pneumothorax, with the heart displaced to the right. The next day there was a high pulse-rate and temperature, and the girl was weak and had labored and rapid breathing. She was pale, extremely emaciated and had a constant, dry cough.

On Oct. 10, the left chest was slightly larger than the right, and tympanitic on percussion. The pulse was 120, small and weak; respirations were 40 and labored; and the temperature was 103.5. On the left side of the chest the breath sounds could not be heard: they were replaced by a peculiar metallic sound like the ringing noise made by striking on an empty rain-barrel or hogshead. On the right side the breath sounds were intensified, harsh and hurried. The heart sounds were clear but weak, and dullness or percussion was found two finger breadths to the right of the sternum. The three weeks that followed were relatively uneventful save that all the symptoms previous to the pneumothorax had disappeared, and the girl became her old rational self. She ate well, and without any urging; her bladder trouble was forgotten; she talked and asked to have her friends come and see her; and she replied to questions asked her. The right lung became slightly edematous on the seventh day, but in a day or two it had practically cleared up. On the fifteenth day the edematous condition reappeared and disappeared as before. On but one occasion (the twelfth day) during this time did she complain of the bladder. She felt some pain and retained her urine. Four ounces of urine were drawn with a catheter, and no further disturbances followed. Bed sores developed on the sacrum on the nineteenth day, and these never wholly healed. The last three days fluid appeared in the left chest.

Lucinda died following a sinking spell, Oct. 27, — the twenty-first day of the pneumothorax. Nine hours after death the autopsy was made by Dr. A. W. Hunter, of the Boston City Hospital. His report is:




AUTOPSY.

*Peritoneal cavity.* — Surfaces are normally smooth, with a slight increase of fluid in the cavity. This fluid is clear, limpid and estimated at 100 ccm. The liver extends 10 cm. below the costal border in the median line and 8.5 cm. in the right midclavicular line. Diaphragm, right sixth rib; the inferior surface is evident in the median line. It has a convexity downward and it is palpable along the costal margin to the level of the eighth rib, where it recedes backward along the eighth and ninth ribs. Throughout its course the convexity is evident downward. The large intestine is moderately distended with gas. Mesenteric lymph nodes are visible, but not enlarged. The appendix lies retrocecal, and is 6 cm. long, with an old, thin, fibrous band stretching across its mid-portion, but apparently is not remarkable.

*Pleural cavities.* — On percussion over the left side of the thorax there is a hyperresonance of tympany. After reflexion of the skin on the anterior thoracic wall a small amount of water was poured between the skin and the thoracic wall, all bubbles removed and a puncture made into the left thoracic cavity below the water line. Through this opening a continuous series of bubbles escaped. On removal of the sternum the left parietal pleura is of a gray color and studded with minute, raised, gray papules.

*Right cavity.* — A few firm, gray adhesions are present on the posterior and apical parts of the visceral pleura. In the cavity there are estimated to be 300 or more cubic centimeters of yellowish, clear, limpid fluid. The interlobar cleft between the upper and middle lobes is obliterated by adhesions, and slightly between the middle and inferior lobes in the axillary line.

*Left cavity.* — The heart occupies the median line. The left lung is contracted and occupies a small area along side of the vertebral column. The pleural cavity is empty except for 300 or 400 ccm. (estimated) of yellowish, slightly turbid, fluid. The upper half of the parietal pleura in the axillary and posterior portions is injected and covered with a thin layer of friable, gray, fibrinous adhesions. Similar scattered areas along the parietal wall are evident. On the visceral surface the pleura is thickened and superimposed; on this gray, thickened pleura is a layer of gray, friable, elastic exudate. The interlobar cleft is obliterated. At the inferior posterior portion of the upper lobe there is a firm, gray, fibrous band binding the lung to the parietal wall; this band is 1 cm. in thickness. Immediately below it is a circumscribed round hole 1 cm. in diameter which communicates with a cavity within the lung. The entire lung is bound posteriorly along the median line to the posterior parietal wall and the vertebral column. The left lung measures 11 cm. in its vertical diameter and 13 cm. in its antero-posterior diameter.

*Pericardial cavity.* — The surfaces are normally smooth, moist and glistening. Cavity contains 50 ccm. of pale, limpid fluid. In the unopened pericardial sac the heart lies 4 cm. to the left of the median line at the fourth space and 2 cm. to the left at the sixth rib, while it reaches 7 cm. to the right of the median line at the fourth space.

*Heart.* — Appears small. Scattered over the epicardial surface, particularly at the right auricle and the left ventricle, there are circumscribed, gray, opaque, macular areas. On section the musculature is brownish colored and of fair consistence. The endocardium is

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smooth, as are also the valves. The coronaries are not remarkable.

Measurements: Tricuspid valve, 10.3 cm.; pulmonary valve, 6.3 cm.; mitral valve, 8 cm.; aortic valve, 5 cm.; left ventricle, 1.2 cm.; right ventricle, 4 mm.

*Right lung.* — Upper lobe: The apex and posterior margin of the right lung are of a mottled, grayish-red color, crepitant throughout, on section very moist, with some pitting on pressure. The anterior half of the upper lobe is firm, hepatized, pinkish in color, on section dry and semi-gelatinous in appearance; it is non-crepitant and has a finely granular surface throughout. Toward the posterior margin of this area there are large, soft, rather dry, cheesy-looking, circumscribed areas .5 to 1 cm. in diameter. The posterior margin of this area also has scattered areas as afore-mentioned, surrounded by crepitant, moist lung tissue.

*Left lung.* — Size is much diminished. The pleura is covered with adhesions as afore-mentioned. Lower lobe: Diaphragmatic surface feels firm, hepatized and gradually fuses in its upper part with mottled, grayish, crepitant lung tissue. The upper lobe at its inferior posterior surface has an opening afore-mentioned. On dissection of the primary bronchi of the left lung there is evident an injected mucosa with five circumscribed, raised, minute nodules on its surface. Deeper in the lung substance the bronchioles are more injected, and one area has a continuous studded area with gray, minute papules. This bronchiole leads into a cavity which communicates with the afore-mentioned hole. This cavity is approximately 5 cm. in diameter vertically and 3 to 4 cm. in its antero-posterior diameter. Its walls have a gray, necrotic, firm appearance, as has also the pleural opening. In the upper third of the upper lobe there is a circumscribed, protruding, nodular mass 6 cm. in diameter, of a mottled, grayish-red color on the pleural surface and firm to palpation. On section it has a soft, slightly moist, gray, granular appearance surrounded by a deep red, very moist, crepitant lung substance. The peribronchial lymph nodes are palpable, but on section not remarkable.

*Spleen.* — Is apparently of normal size. On section it has a mottled, deep red color. Pulp is scant; trabeculæ prominent.

*Gastro-intestinal tract.* — Aside from the slight distention of the large intestine, it is not remarkable.

*Pancreas.* — Is well-shaped and negative.

*Liver.* — Weight estimated at 1,200 to 1,500 gm. The capsule is smooth; on section it has a mottled, yellowish-red color which is uniform throughout. The small sinusoids appear somewhat prominent and filled with pus. Gall bladder is moderately distended with green bile.

*Kidneys.* — Weight apparently of normal size. Slight fetal lobulations persisting. The capsule is thin and non-adherent, leaving a smooth surface when stripped. On section the cortex and pyramids have a mottled, dark red color. Considerable blood oozes on to the cut surface, particularly in the pyramids. The cortex is of normal thickness; otherwise the kidneys are not remarkable.

*Adrenals.* — Negative.

*Bladder.* — Is moderately distended with urine. The mucosa is smooth. Beneath the mucosa there are numerous mottled, dark red areas which on section do not appear to involve the muscular coat. They are most evident on the inferior surface of the bladder.

*Genital organs.* — The vagina is negative. Cervix is conical and patent. The uterus is small and firm; the mucosa of deeper red color. The tubes and ovaries are apparently negative.

*Aorta.* — Is smooth, elastic and of a pale yellow color.

*Thoracic duct.* — Is defined but not remarkable.

*Head.* — Not done.

MICROSCOPICAL EXAMINATION.

*Heart.* — Negative.

*Lung.* — Much fibrin in alveoli; endothelial leucocytes; areas of caseation. Small areas of apparent connective tissue growth within the alveoli. Diagnosis: Tuberculous pneumonia; organizing pneumonia.

*Pleura.* — Areas of tuberculous nodules showing giant cells. Other part shows necrosis, fibrin, giant cells and connective tissue increase.

*Spleen.* — Negative.

*Stomach.* — Negative.

*Intestine.* — Mucous cell débris and bacteria on gut mucous membrane.

*Pancreas.* — Negative.

*Liver.* — Congested.

*Kidney.* — Congested.

*Adrenal.* — Negative.

*Lymph node* (peribronchial) shows areas of tuberculous necrosis and giant cells.

*Uterus.* — Negative.

*Gall bladder.* — Desquamation of cells.

*Bladder.* — Submucosal edema, congestion and a small submucosal hemorrhage.

*Aorta.* — Discrete nodules of intimal proliferation and thickening.

ANATOMICAL DIAGNOSES.

Pneumothorax.
Acute pleurisy with effusion. } Tuberculous.
Chronic tuberculous pleuritis. } Tuberculous.
Hydrothorax.
Hydropericardium (slight).
Hydroperitoneum.
Chronic abscess of lung with rupture into the pleural cavity.
Tuberculous pneumonia.
Tuberculous bronchitis.
Atelectasis of lung.
Emaciation.
Pigmentation of skin.
Tuberculous adenitis.
Organizing pneumonia.
Congestion of liver and kidneys.

## Clinical Department.

### A CASE OF MALTA FEVER IN BOSTON.

BY HAROLD H. SMITH, M.D.,
*Medical House Officer, Carney Hospital, Boston.*

(From the Medical Service of the Carney Hospital, Henry A. Christian, M.D., Physician-in-Chief.)

The following case is reported to call attention to the possibility of meeting cases of Malta fever in the United States.[1] Malta faver is a much more widespread disease than its name implies, and is extremely common in all countries bordering the Mediterranean, and fairly frequent in all tropical and semi-tropical regions, including the West Indies and Philippine Islands. Immigrants or American tourists returning from any of these lands can very easily bring the disease with them on account of its protracted course and numerous

[1] The incidence of tropical diseases in Boston hospitals is emphasized by the presence at the Carney Hospital within six months of cases of relapsing fever, uncinariasis and Malta fever, and one case in which typhus fever was strongly simulated.

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remissions. Such cases undoubtedly occur here with considerable frequency, although they are rarely recognized.

Therefore, the possibility of Malta fever should be considered in every obscure case of continued or remittent fever occurring in a person lately returned from any of the above-mentioned countries, if the physical signs are practically negative, except for enlarged spleen; if the leucocyte count is persistently low, and if the blood serum fails to agglutinate typhoid and paratyphoid organisms. In such a case the diagnosis can easily be made or ruled out by determining the agglutinating power of the patient's serum toward the *micrococcus melitensis*. Positive blood cultures have been obtained by some observers in a high percentage of cases and furnish even better diagnostic evidence than agglutination, but a negative culture does not rule out the diagnosis.

Patient is a male Italian, thirty-nine years of age, married, a shoemaker. He had always lived near Palermo, in Sicily, and came to the Carney Hospital directly from the United States Immigration Bureau, May 9, 1910. Patient speaks no English and very little in the way of history could be obtained except that he had been sick with fever for four days and had had three slight chills.

*Physical examination* shows a well-developed and well-nourished man lying comfortably in bed, breathing somewhat rapidly.

*Glands* show no general enlargement.

*Neck:* There is no rigidity. There is visible carotid pulsation on both sides.

*Skin* is hot and dry, shows no rash and no scars.

*Chest:* Well formed, symmetrical, expands equally on both sides.

*Lungs:* Resonance is normal in front; behind there is slight dullness over the left base. Breath sounds are somewhat diminished in intensity over both bases behind, but are normal elsewhere. Tactile fremitus and voice sounds are everywhere normal. There are many fine moist râles and a few high-pitched musical râles over both bases behind, more on the left. Occasional fine moist râles are present on both sides in front.

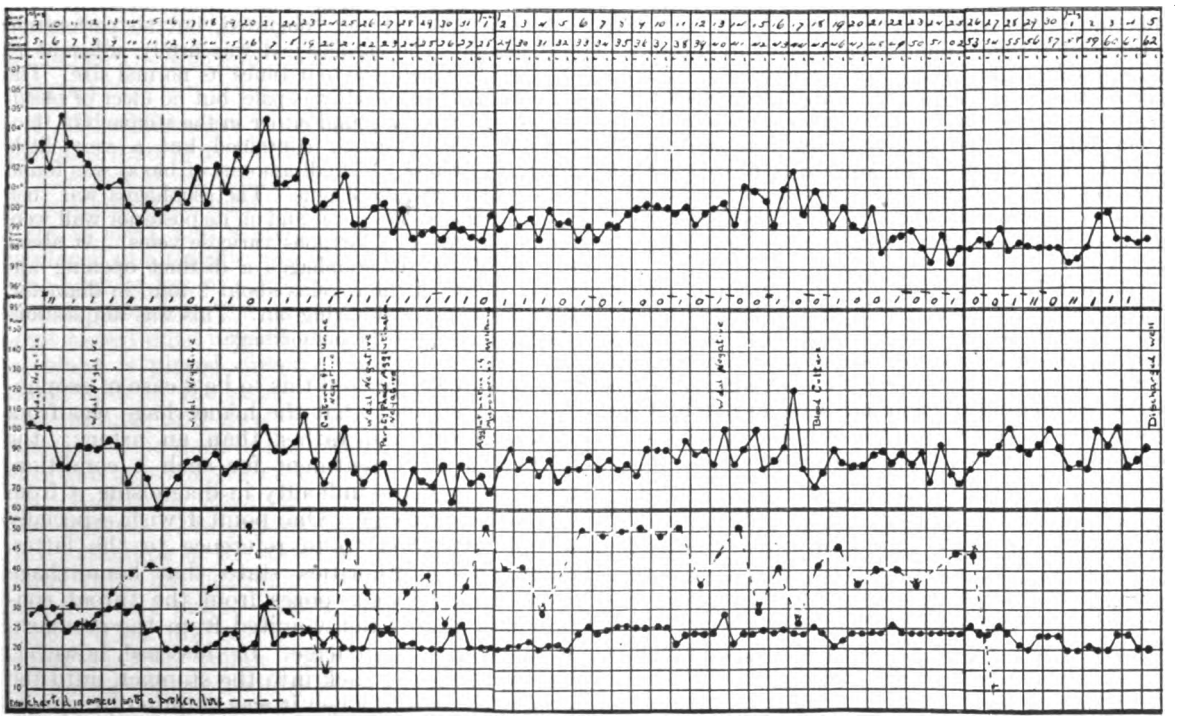
*Heart:* The apex impulse is seen and felt in the fifth space, 3½ inches to the left of the mid-sternal line. The left border of dullness is 4 inches from the mid-sternal line; right border at the right sternal margin; upper border at the top of the third rib. Heart's action is regular, sounds clear and loud. No murmurs.

*Radial arteries* show slight thickening. Pulses are equal, synchronous, regular, fair volume and normal tension.

*Abdomen:* Level, soft, no tenderness. No masses felt. Liver dullness extends from the fifth intercostal space on the right to the costal margin; its edge is palpable. Spleen is markedly enlarged, its edge being easily palpable two fingers' breadth below the costal margin. The edge is sharp and the organ seems firm.

*Reflexes:* Knee jerks are present and equal. There is no Kernig or Babinski sign. No ankle clonus.

*Extremities:* Negative.



*Pupils* are equal, regular and react promptly to light and with accommodation. External ocular muscles are normal.

*Mouth:* The teeth are neglected and carious and there is marked pyorrhea alveolaris. The tongue protrudes in the median line, is covered by a moist white coat and shows a fine tremor. The lips and oral mucous membranes are slightly pale. Pharynx is normal.

*Genitals:* Negative.

*Blood:* Hemoglobin, 85%. Leucocyte count, 4,000. Stained smear is not remarkable. There are no malarial plasmodia in either fresh or stained specimens. Serum does not agglutinate *B. typhosus*.

*Stool:* A very few ova of ascaris lumbricoides and trichuris trichiuris.

*Sputum* shows no tubercle bacilli.

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The case appeared to be a mild typhoid, but malaria and tuberculosis were strongly considered. The patient had no chills while in the hospital, and repeated blood examinations failed to show any plasmodia. Sputum was very scanty and never showed tubercle bacilli.

The subsequent course is best shown by the accompanying chart. The patient complained of practically no pain at any time. There was moderate constipation throughout. The pulmonary signs persisted for nearly two weeks and then gradually cleared up except for a small area below the right nipple. Over this area there were persistent fine moist râles. At one time there was heard a slight friction sound in the right axilla; this disappeared in a few days. The spleen became progressively smaller, but was still palpable when the patient left the hospital. The leucocyte count never went higher than 6,000. The blood serum failed to agglutinate *B. typhosus*. A single agglutination test with paratyphoid bacilli was negative.

Suspecting Malta fever, on May 24 cultures were made from a catheter specimen of urine. These cultures were negative except for a few colonies of Gram-positive cocci, apparently staphylococcus albus.

On June 1 a microscopic agglutination test was tried, using the patient's serum and a fresh bouillon culture of the micrococcus melitensis. The 1:10 preparation showed no clumping after one hour. The 1:50 preparation showed marked clumping at the end of half an hour. On the following day a macroscopic agglutination test was performed, using bouillon cultures and patient's serum in dilutions 1:10, 1:100, 1:500, 1:1,000. A control series of similar dilutions of normal serum was also prepared. At the end of fifteen hours the 1:100, 1:500, 1:1,000 preparations of patient's serum showed clear fluid with flocculent precipitate. The fluid in the 1:10 tube was turbid with no precipitate. All of the control series were turbid, although the 1:10 dilution showed a slight tendency to agglutinate. Microscopic examination of fluid from the 1:1,000 dilution showed abundant organisms in the control, none in the patient's.

On June 5 the macroscopic agglutination was repeated, using a different control and carrying the dilutions up to 1:50,000. The patient's serum produced complete agglutination up to and including 1:5,000 dilution. None of the control series showed any agglutination.

On June 18 some blood was taken from a vein and cultures made in bouillon, bile and on agar slants and agar plates.[2] These cultures were incubated for two weeks and examined every second day. The majority of cultures showed no growth. A few colonies of Gram-negative cocci did develop, but were evidently a contamination. There was no growth of micrococcus melitensis. The bile culture remained sterile, showing absence of B. typhosus.

The absence of agglutinins for B. typhosus and B. paratyphosus in this patient's serum with the presence of agglutinins for micrococcus melitensis in high dilution (1:5,000) renders the diagnosis of Malta fever quite certain. The failure to obtain agglutination in very low dilutions (1:10), as in this serum, is not a very infrequent observation with sera of high agglutinating power and does not militate against the correctness of the diagnosis.

## ESOPHAGEAL HEMORRHAGE.

BY C. C. NICOLA, M.D.

The following case is reported on account of its unusual character and to add to the statistics of this class of cases.

[2] For assistance in making and studying the blood cultures, I wish to acknowledge my indebtedness to Daniel J. Hurley, M.D., of the Pathological Department of the Boston City Hospital.

The patient, Mr. E. S., was brought into the Attleboro Sanitarium Hospital on the morning of Nov. 20, 1909, with a history of severe and persistent hematemesis. Patient was married, thirty-eight years old, an employee in a jewelry factory. He was referred to the hospital by Drs. Holman and Kent, from whom and from the patient's wife the following history was obtained:

Patient had always been generally well, except for occasional indigestion. Last night he went with his wife to the theater, apparently in perfect health. At 9.30 he complained of a feeling of fullness and warmth in the stomach. On reaching home, he vomited a large quantity of blood and food. A physician was called and the vomiting recurred. The attending physicians estimated that at least three quarts of blood were vomited. By morning he was practically pulseless, but was revived somewhat and brought to the hospital in an automobile. Soon after arriving, at 9.30 A.M., he vomited 1½ pints more of dark blood. He was given ¼ gr. morphine, with ice-bag to epigastrium and heat to legs. A saline enema was administered. His pulse was 130 and very weak; mind clear and active. The vomiting stopped and the patient seemed very cheerful during the afternoon. About 5 P.M. he suddenly began to breathe irregularly, and in ten minutes was dead.

An examination of the early vomitus showed undigested food, including good-sized pieces of beef tongue with hard rind which had been swallowed without chewing. A hurried autopsy was held just before the body was removed from the hospital. The stomach was found distended with gas and the posterior surface of the pyloric end was firmly adherent to the liver over a space of 1½ by 3 inches. The peritoneum about these adhesions was red and congested, but no perforation was found. The cardiac end was firmly adherent to the spleen, which was four times its normal size. The mucosa of the stomach was pale, but no ulcer or bleeding point could be found either in the stomach or duodenum. The stomach contained but a very little amount of blood. A small amount of blood was found oozing from the esophagus. The esophagus was then opened through the chest, and on its posterior wall were found a number of tortuous varicose veins. At about the middle of the esophagus a distinct opening was found in one of these veins about 2 mm. in diameter, with the blood still oozing out. This was unquestionably the source of the hemorrhage.

The autopsy proved this to be a case of esophageal hemorrhage; that the hemorrhage was from a good-sized vein rather than an artery; the futility of any treatment for such a condition, together with the difficulty in diagnosing it from gastric hemorrhage. One point I wish especially to call attention to in reference to the latter. Some good authorities state that hemorrhage from the esophagus oozes from the throat continuously and is not vomited from the stomach, as in gastric hemorrhage. In this case, however, the blood flowed back into the stomach until the stomach was full, when it was emptied by vomiting, no more blood appearing until the stomach was filled again.

It is also remarkable that this patient should have had no greater disturbances of digestion preceding the hemorrhage in view of the inflammation which he must previously have had in order to produce the adhesions which were found between the stomach and liver and spleen.

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## Medical Progress.

### RECENT PROGRESS IN PHYSIOLOGICAL CHEMISTRY.

BY J. BERGEN OGDEN, M.D., NEW YORK CITY.

#### TITRATION OF URINARY ACIDITY.

O. SPINDLER[1] has studied this subject and has reported that acidimetric titrations in presence of $NH_4$ salts do not give exact results unless allowance is made for the retardation of the end reaction caused by the dissociation of these salts. This effect depends upon the degree of dissociation, and may be minimized by the addition of a neutral and indifferent salt, such as NaCl. These principles are especially important in application to urine, the apparent acidity of which is strongly influenced by variations in $NH_3$. The exact acidity of urine cannot be titrated unless the content of $NH_3$ is known, and vice versa. Method: Place 20 ccm. urine in a 100-ccm. flask; add 20 ccm. $\frac{N}{10}$ NaOH, 10 ccm. of a 10% solution of barium chloride, mix, dilute to 100 ccm., and filter. To 50 ccm. of the filtrate add 10 ccm. $\frac{N}{10}$ $H_2SO_4$, three drops of phenolphthalein solution, and titrate the acidity with $\frac{N}{10}$ NaOH. To determine $NH_3$, add excess of $CH_2O$ and continue the titration with NaOH.

#### A CLINICAL METHOD FOR THE QUANTITATIVE ESTIMATION OF URIC ACID IN BLOOD SERUM.

P. Roethlisberger[2] has investigated this subject and reports as follows:

The test is carried out in a room that is dark or contains little light. A red light or an electric light is used, and a strip of silver nitrate paper is placed in a tightly closed glass or porcelain box. One ccm. or less of a 15% sodium carbonate solution is placed on the reagent paper and the box kept closed until it is all absorbed. A single drop of blood is placed directly on the center of the moist spot of the paper. The box is closed for two minutes and then the paper is removed and washed in the dark in pure water. After ten minutes the paper is placed in a solution of one part $NH_3$ to two or three parts of distilled water for five minutes. The paper is again washed in water. After standing in the water bath for several hours away from the light the paper is dried and examined for a stain. When wet it shows a gray spot. When uric acid is present, the carbonated paper shows a yellow spot which changes with increasing concentrations of uric acid to brown, red and dark brown. In cattle, sheep and horse blood, also in ox, pig, rabbit and dog blood, no uric acid was found; 0.008% uric acid was found in birds' blood. Varying amounts of uric acid were found in the blood of a five-year-old child fed on a meat-free diet; in healthy cases 0.001–0.004% were found. In cases of chronic nephritis and nervous disorders, 0.008–0.012% of uric acid were found. The possibilities of the influence of other reducing agents on the test are noted. With this method from 1-1,000th to 1-2,000th part of uric acid is detected, and the results calculated to 100 ccm. of serum are accurate to 1 to 2 mgm. Illustrations of the test using cattle blood serum and amounts of uric acid from 0 to 0.012% are given.

#### IRON OF THE URINE.

Urines of a number of animals were all found by O. Walter[3] to contain measurable amounts of iron. It is present in colloidal condition, and urine can be dialyzed twenty-four hours without loss of iron. The latter is present in two forms, a "loosely combined" form, from which it is precipitated by boiling with $(NH_4)_2S$, and a "closely bound" form which can be determined only in the ash. The loosely combined iron is determined by neutralizing the urine (entire twenty-four-hour portion) with $NH_3$, adding $(NH_4)_2S$, and concentrating on the water bath to one third its volume. The solution is filtered and the precipitate dissolved in dilute $H_2SO_4$. The iron is oxidized to ferric condition by boiling with 2 ccm. $H_2O_2$ solution and titrated with KI and $\frac{N}{10}$ $Na_2S_2O_3$. To determine the closely bound iron the urine is first dialyzed twenty-four hours, then concentrated to dryness with 30 ccm. concentrated $HNO_3$. The residue is charred on a sand bath and ashed in crucibles. The ash is dissolved in 10% HCl, boiled three quarters of an hour with 2 ccm. 3% $H_2O_2$, treated with 2 gm. KI, and titrated with $\frac{N}{10}$ $Na_2S_2O_3$. A correction of 0.32 mgm. iron was made for the iodine freed by the undecomposed $H_2O_2$. The daily excretion of iron for a man, or a 20 kgm. dog, is about 1 mgm. In herbivorous animals (rabbit, ox, sheep, goat) a considerable portion of the Fe excreted is loosely combined. In normal human urine none can be detected in this form. Cases of pernicious anemia, diabetes and polycythemia rubra excreted about twice the normal amount of iron, a portion being loosely combined. Continued administration of medicinal blood-Fe preparations to men or dogs increases the Fe excretion. Subcutaneous injection of officinal Fe preparations causes a quick increase in Fe excretion, usually accompanied by injury to the renal epithelium.

#### THE OCCURRENCE OF A PIGMENT SIMILAR TO UROROSEIN IN CERTAIN PATHOLOGICAL URINES.

Nephrorosein, a pigment similar in many of its properties to urorosein, is often found in the urines of convalescents from scarlet fever. V. Arnold[4] also observed it in three cases of orthostatic albuminuria, once in a case of tuberculosis and once in a case of hematoporphyrinuria following sulphonal poisoning. In properties the pigment may be differentiated from urorosein by the fact that the color does not fade so quickly after addition of the acid, and by the absorption spectrum of an amyl alcohol extract of the urine after

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addition of one-third volume of concentrated HCl and one drop of 1% $NaNO_2$ (or concentrated $HNO_3$ alone may be employed). Urorosein gives an absorption band between D and E, while nephrorosein shows a broad band between E and F (λ517–500).

### THE OCCURRENCE AND SIGNIFICANCE OF ALLANTOIN IN HUMAN URINE.

Alfred Schittenhelm and Karl Wiener [5] followed the method of Wiechowski and found allantoin in human urine, confirming Wiechowski's results. The quantity found was very small (0.02 gr. from 8 liters of urine) or was frequently impossible of isolation. The significance of allantoin in human urine is obscure. Feeding with uric acid was not found to increase the quantity of allantoin eliminated. Hence allantoin in the human being is probably not an end product of uric acid metabolism. When allantoin is fed, about 30% is recovered in the urine.

### THE DETECTION OF TRYPSINOGEN AND TRYPSIN IN URINE.

E. Schoenborn [6] conducted experiments on human, pig and dog urine. Both heated and unheated samples of urine were used. Kinase and enterokinase were sometimes used. The urine was tested after hunger, also after feeding meat. When kinase from sick dogs was used, no activating action was noted. The author concludes from his experiments that active trypsin is seldom present in normal dog's urine and, when present, the amount is very small. Trypsinogen is frequently present in dog's urine and can be converted into active trypsin by means of kinase. Trypsinogen is regularly obtained in large amounts after feeding a meat diet; after a mixed diet the amount obtained is often very small. The amount of trypsinogen on a meat diet corresponds approximately to that of a solution of 0.02 gm. of Grübler's trypsin per 100 ccm. of urine. The urine of hungry dogs often contains the same amount, and after a long-continued period of hunger, during the last days, in addition to trypsinogen, active trypsin is present in appreciable amounts. After the addition of kinase, the tryptic action of this urine was noticeably increased. Moreover, in the urine of hunger a substance was frequently found which was not rendered inactive by heating and was capable of considerably increasing the action of the active trypsin. In many human pathological urines a strong antitryptic action could be detected.

### THE DEPRESSOR SUBSTANCE OF DOG'S URINE AND ITS DISAPPEARANCE IN CERTAIN FORMS OF EXPERIMENTAL ACUTE NEPHRITIS.

Experiments were conducted by R. M. Pearce,[7] who found that normal dog's urine contains a depressor substance which, when urine is injected intravenously in doses of 3 ccm., has the power to cause a fall in blood pressure equal to 40–70 mm. of mercury. The exact nature of this substance was not determined. It is not destroyed at 100°, but disappears on prolonged heating. It does not dialyze readily. Alcohol precipitates it completely. The depressor substance disappears at the third to sixth day from the urine of dogs with tubular nephritis, or, if it does not disappear entirely, it is greatly diminished in amount. This disappearance or diminution was not observed in those forms of vascular nephritis due to arsenic or cantharidin. The depressor substance would appear, therefore, to be associated with normal tubule functions, a view supported by the observation that it is greatly diminished at the height of diuresis in the normal animal. Its disappearance in experimental nephritis may be taken as an indication of extensive tubular injury and its reappearance as beginning of repair. The non-elimination of this substance is accompanied in some animals by a low blood pressure, which suggests an influence due to retention of of this substance.

### THE RELATION OF PTYALIN CONCENTRATION TO THE DIET AND TO THE RATE OF SALIVARY SECRETION.

No evidence could be obtained by A. J. Carlson and A. L. Crittenden [8] that in man even years of exclusion of meats and greatly increased carbohydrates in the food would appreciably increase the ptyalin concentration of the saliva. No ptyalin was found in the saliva of the dog, cat or fox. In monkeys the diastatic power of the parotid and mixed saliva appeared to be the same or less than that of man. The ptyalin concentration in the rabbits' parotid was found to be the same or slightly greater than that of man, but in the parotid and mixed saliva of the goat and horse no diastatic power could be detected. Weak acids (acetic) in the mouth were a more efficient stimulus to the secretion of the parotid than mechanical stimuli, and within limits the stronger the acid the greater the rate of secretion. The concentration of the ptyalin in the parotid saliva of the rabbit varies directly with that of the organic solids. In man the rapidly secreted parotid saliva contains more ptyalin than the slowly secreted saliva. Qualitatively, different stimuli yield no constant difference in the ptyalin concentration of the parotid saliva in man. In varying directly with the organic solids and the secretion rate the processes of ptyalin secretion appear to differ from the ferment-secreting processes in other digestive glands.

### INHIBITION OF THE ACTION OF RENNET ON MILK.

The well-known fact that serum added to milk inhibits the action upon it of rennin was confirmed by Kurt Schern [9] in experiments with normal fresh beef serum. The consideration that in cows suffering from inflammation of the mammary glands serum might enter the milk and so render the milk less sensitive to rennin was borne out by experiment. It was found that to coagulate the pathological milk a larger amount of rennin was necessary than for normal milk. In one of several pathological cases observed the mixed

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milk from all the udders of the same cow required 1.75 times the rennin required by normal milk. Examination of the milk of each udder showed one to require fourteen times the normal, thus locating the diseased organ. In a series of animals observed, the variations from day to day in the normal mixed milk of an individual lay between 1:1000 and 1:1400 rennin concentration in terms of the Morgenroth standard. For single udders this might be greater. The results indicate that this method of the determination of the minimum for rennet action can be used to determine pathological milk.

### RESORPTION OF FATS IN THE SMALL INTESTINE.

Experiments were conducted by W. Croner[10] upon dogs provided with the Zuntz modification of the Thiry-Vella fistula. About one fifth of the intestine was included between the fistulas, the upper portion of which opened through the back of the animal, allowing liquids to be run in quantitatively, without difficulty. The lower fistula opened through the abdomen. The soap solutions or fat suspensions were run in slowly, one and one-half hours being taken to run in 30–50 ccm. of liquid. The latter ran slowly through the intestine and out the lower fistula, simulating the natural progress of the nutrient mixtures. The section of the intestine was then washed with 0.9% solution of NaCl. Recovery of unabsorbed fats was quantitative. In three animals used, the upper part of the intestine was experimented upon; in two, the part next the cecum. It was found that only the lower section of the intestine absorbs soaps. Neither bile nor gastric juice overcomes the inability of the upper parts to absorb soaps. Emulsified neutral fats are absorbed by all parts of the small intestine; most rapidly by the lower. The absorption is more rapid after the intestine has been acted upon previously by diluted HCl, pancreas, or bile. The absorption varies somewhat with the nature of the fats and their free-acid content.

### A NEW DELICATE SKATOL REACTION.

T. Sasaki[11] has found that when one takes 3 ccm. of a skatol solution in a test tube and adds three drops of methyl alcohol and 3 ccm. concentrated $H_2SO_4$ are then run under the skatol solution, a violet-red ring forms in a short time at the boundary between the two liquids. After a few minutes the contents of the tube are carefully mixed. The entire liquid becomes violet-red. The more dilute the skatol solution, the more the violet shade predominates. The reaction permits detection of skatol in a dilution of 1:5,000,000. The ring, however, is no longer visible when the dilution has reached 1:1,000,000, the color appearing only after the liquids are mixed. The reaction fails with water suspensions because the skatol crystals touch the $H_2SO_4$ directly, and the entire liquid becomes brown. The reaction has an advantage over other skatol tests in being negative with indol. Tryptophane and a methyl indol also do not give the reaction. Methyl alcohol cannot be replaced by ethyl alcohol in making the test.

### THE MOTHER SUBSTANCE OF GLYCOGEN.

In experiments performed upon a large number of dogs, E. Pflüger and P. Junkersdorf[12] observed the following: In a dog (5–10 kgm.) which was starved seven days, water being given and which on the mornings of the three succeeding days of continued starvation was subcutaneously injected with 1 gm. phloridzin, seven hours after the last injection the glycogen content of the liver was reduced to 0.1% and of the muscles to 0.2%. Twenty-four hours later, although no nourishment had been given, glycogen reappeared and at times in large amounts (2–3%), a fact overlooked by Mohr.[13] This increase could hardly have arisen from carbohydrates. It was found that phloridzin stimulates the production of glycogen, since the liver and muscle of dogs without phloridzin treatment contained less glycogen on the eleventh day than when treated. Dogs which had been made glycogen-free were fed for eight days on as much codfish meat (which contains but little glycogen) as they could take. The increase in glycogen content of the liver and muscle was four to five fold out of proportion to what might be contained as glycogen in the food. Dogs, however, the livers of which had been loaded with glycogen[14] by glycogen feeding, when subjected to a rich meat diet were found to lose, to a large degree, their glycogen rapidly. Glycogen-free dogs, to the diet of which easily oxidizable alcohol had been added, showed no increase in glycogen production. Therefore, the marked glycogen increase, in rich protein diet, cannot be attributed to an indirect economy of carbohydrate. Fat fed to glycogen-free dogs caused no increase, but the reverse, so that during rich protein diet the large glycogen production cannot have arisen from fat, but only from the protein.

### A SIMPLE METHOD FOR THE ESTIMATION OF IODINE.

Experiments made by E. Winterstein and E. Herzfeld[15] show that 50 ccm. of solution should be placed in a 250-ccm. round-bottomed flask (which must be fitted with a ground-glass stopper through which pass two tubes, as in an ordinary wash bottle) and treated with 5 ccm. syrupy $H_3PO_4$ and 10–20 ccm. $H_2O_2$ solution. The outlet tube from the flask is joined by a ground glass connection with a small condenser, which is led into potassium iodide solution. Air is drawn through the apparatus, the contents of the glass being gradually heated to boiling. At the end of thirty minutes the iodine has all been transferred to the potassium iodide solution and is titrated with $\frac{N}{10}$ $Na_2S_2O_3$ solution. When applied to urine, it is necessary to evaporate and ignite the residue with alkali, prior to the distillation, if all the iodine is to be obtained. Figures cited indicate that the method gives very satisfactory results, which tend, however, to be somewhat low.

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THE ACETIC ACID TEST FOR THE DIFFERENTIATION OF EXUDATE AND TRANSUDATE.

K. Piefer[16] who has made an investigation of exudates and transudates, finds the following tests of value. Two ccm. of the fluid removed after a puncture are treated with two drops of 5% AcOH. In the case of an exudate, a visible and more or less thick cloud appears which often is transformed into a flocculent precipitate. In the case of a transudate the cloud disappears, or after adding four or five drops of acetic acid an opalescence is produced. When a few drops of exudate are dropped into a cylinder containing 100 ccm. of $H_2O$ and 2 drops of acetic acid, milk-white streaks develop. With a transudate the drops are divided and in certain cases a dark gray turbidity results. These tests were used in ninety-five clinical cases. Both served to distinguish transudates from exudates. Visible differences are noted in both tests when carried out with blood plasma or serum.

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# Reports of Societies.

## THE AMERICAN GASTRO-ENTEROLOGICAL ASSOCIATION.

Thirteenth Annual Meeting, Held at the Planter's Hotel, St. Louis, Mo., June 6 and 7, 1910.

First Day, Monday, June 6.

The President, Dr. Julius Friedenwald, of Baltimore, in the chair.

THE PRESIDENT'S ADDRESS: RECENT EVENTS IN THE DEVELOPMENT OF GASTRO-ENTEROLOGY.

Dr. Friedenwald, in his opening address, said he could point out but a few of the many contributions that had been added to our knowledge of diseases of the stomach. After referring to Kussmaul's epoch-making work in connection with the therapeutic value of the stomach tube, it remained for Leube, in 1871, to point out the advantage of the stomach tube as a diagnostic measure and also to emphasize the fact that it was impossible to arrive at a proper conclusion concerning the nature of the gastric conditions without the use of this instrument. Twelve years later Leube established his test-meal as a means of determining the state of motor insufficiency of the stomach, concluding that a normal stomach should be empty seven hours after the ingestion of a meal composed of soup, broth, steak and bread. This is still recognized to-day as a most important means of determining variations in the motor function of the stomach. Leube also at this time analyzed the gastric secretion obtained from the stomach, and in 1883 he developed his well-known scale of the digestibility of various foods, which he earnestly advocated as a means of diet in the treatment of ulcer of the stomach.

Riegel, in 1885, showed the difficulties encountered in obtaining gastric juice by stimulating the gastric secretion by means of ice water, according to the method of Leube. In their classic work on the "Physiology and Pathology of Digestion," 1885, Ewald and Boas presented their experiments regarding the appearance of free hydrochloric acid and lactic acid in the stomach contents, and also drew attention to other important features connected with the chemistry of the gastric digestion. The speaker also referred to the work of Reichmann, and the well-known investigations of Beaumont, Richet and Uffelmann and Penzoldt, and spoke of the gratitude due to J. P. Pawlow and his pupils for the many new facts discovered by them relating to the physiology of gastric digestion. The value of surgical procedures in the treatment of certain disorders of the stomach was first discovered by the great master, Kussmaul, which gave Billroth his inspiration. Woelfler, in 1881, introduced the operation of gastro-enterostomy into surgery; he first performed the operation for inoperable carcinoma of the pylorus in which complete resection of this portion of the stomach was no longer possible. The Heinecke-Mikulicz pyloroplasty was devised by both Heinecke and Mikulicz independently of each other.

STRETCHING OF THE CARDIA IN THE TREATMENT OF CARDIOSPASM AND IDIOPATHIC DILATATION OF THE ESOPHAGUS.

By Dr. Max Einhorn, of New York. This was a detailed report of two cases of cardiospasm and three of idiopathic dilatation of the esophagus successfully treated by repeated stretching of the cardia by means of a metallic cardiodilator constructed by the author. The success of this treatment in these cases had induced him to try a similar method of treatment in pylorospasm, and in some cases of that condition he had apparently had good results by stretching the pylorus.

DUODENAL ALIMENTATION.

Dr. Max Einhorn, of New York, read a paper on this subject and demonstrated an apparatus devised by himself by which nourishment could be injected directly into the duodenum. The method consisted, essentially, of introducing the duodenal pump, which had been originally devised for the purpose of obtaining the duodenal contents, into the digestive tract, and feeding was begun as soon as its end was in the duodenum. The apparatus was left in the digestive system for from eight to twelve days; the thin rubber tube did not inconvenience the patient, and thus he was always ready for the feeding. This was best done at intervals of two hours. After the feeding, water was forced through the tube, and finally air was blown through it and the stopcock was then closed. At a single feeding, between 240 and 300 ccm. of food could be slowly introduced. All fluids must, of course, be introduced at body temperature. Dr. Einhorn said he had successfully used this method of duodenal feeding in three cases, in all of which the usual methods of alimentation were either impossible or undesirable. The advantages of duodenal over rectal feeding were at once apparent, for while the rectum and colon were simply organs for the expulsion of feces and for the absorption of possibly remaining liquids, in the duodenum we had to deal with an organ where the most important digestive juices were secreted.

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CARDIOSPASM, WITH DILATATION OF THE ESOPHAGUS.

Dr. Jesse S. Myer, of St. Louis, read this paper, in which he reported ten cases of cardiospasm, seven males and three females, treated by forcible dilatation from above. He emphasized the importance of early diagnosis and early relief of the spasm in order to restrict as much as possible the sac development. It was questionable, he thought, that a sacculated esophagus ever fully regained its normal tone; long after the spasm had been completely relieved, certain symptoms persisted because of this fact. Dr. Myer said that his experience with this series of ten cases led him to the belief that there was a congenital basis for the development of the sacculation. These individuals presented certain well-defined outward evidences which indicated a congenital tendency to a general asthenic state. That cardiospasm was of nervous origin seemed to be the general consensus of opinion. How or why it developed in certain persons, however, had never been satisfactorily explained. Many etiological factors had been considered in the previous case reports, but in none, perhaps, with the possible exception of trauma, had any essential connection been determined. For the development of cardiospasm, as for certain other conditions dependent upon nervous causes, there were probably necessary two factors, i. e., a predisposition and an irritant.

The dilator which Dr. Myer used in the stretching of the cardia in his cases consisted of a double rubber bag with a silk bag inserted between them, and attached to the ordinary stomach tube having no opening in the end.

TORTUOUS STRICTURE INVOLVING THREE AND A HALF INCHES OF THE CARDIAC END OF THE STOMACH TREATED BY GRADUAL DILATATION.

Dr. Bertram N. Sippy, of Chicago, reported this case and gave a demonstration of the instrument he employed.

The papers of Dr. Einhorn and those of Drs. Myer and Sippy were discussed together.

Dr. Charles G. Stockton, of Buffalo, said he had had some experience with cardiospasm and with its treatment by dilatation, and while he had succeeded in some instances, there were others in which the result was not satisfactory. He had had cases where he did not succeed in passing a dilator.

Dr. Allen Arthur Jones, of Buffalo, said the condition of cardiospasm was one of the most difficult that internists and gastro-enterologists had been called upon to treat. Surgical interference in these cases was not altogether satisfactory. The only operation that had been feasible in most instances had not attacked the disease at all, but had simply been undertaken to short-circuit it and feed the patient through an artificial opening. For this operation, it might be said in its favor that some cases of cardiospasm were greatly improved by it, and it was possible in a few instances to allow the artificial opening to close, and thereafter the patient was able to take his or her food in the normal manner. In those cases, one could not help feeling that the condition was accompanied by some intermittent or continuous irritation, either direct or indirect, which gave rise to the spasm and closed the esophagus and cardia, and that the operation allayed the irritation and overcame the spasm.

Dr. John A. Lichty, of Pittsburgh, believed we were coming more and more to feel that gastric ulcer was not a local disease; that it was rather a disease due to constitutional, nutritional disturbance, and if we must feed these patients by the rectal method or starve them, we were to that extent hazarding their chances of recovery by further interfering with their nutrition. Therefore, if this method of Dr. Einhorn's of feeding the patient directly into the duodenum by passing a tube through the pylorus proved successful, we had made a great step in advance in the treatment of gastric and duodenal ulcer.

Dr. A. L. Benedict, of Buffalo, said he had never seen a case of esophageal spasm which required any extreme treatment. One or two passages with an ordinary bougie, a little valerian suggestion, if you pleased, — at any rate, very mild measures were sufficient to relieve the condition. In his own experience, we had a very simple type of esophageal spasm which yielded readily to mild measures of treatment, or else we had to deal with a distinctly organic or at least mechanical obstruction.

Dr. Max Einhorn said that in his paper he had differentiated between cardiospasm and idiopathic dilatation of the esophagus. Cardiospasm was a frequent condition and was easily cured in many instances. It was a neurotic affair. With idiopathic dilatation of the esophagus, however, no matter how originally produced, we found a different picture. These patients were never cured with drugs or suggestive measures, and even the introduction of small-sized bougies would not cure them. When, however, we began to dilate forcibly, overstretching the cardia and making it much larger than normal, then we might accomplish a cure. Cardiospasm and idiopathic dilatation of the esophagus were two entirely different conditions, and we should not mix them up.

Dr. Jesse S. Myer said he was not yet quite clear as to how Dr. Einhorn differentiated clinically between cardiospasm, with dilatation of the esophagus, and idiopathic dilatation of the esophagus. Dr. Myer said his own cases were all examples of cardiospasm with dilatation. If the cardiospasm were primary, then we were perfectly entitled to consider the condition as cardiospasm, with dilatation of the esophagus. Under those circumstances, however, we were not justified in calling it an idiopathic dilatation.

THYROIDISM AS A CAUSATIVE FACTOR OF GASTRIC DISTURBANCE.

Dr. Max Ballin, of Detroit, read a paper on this subject, in which he offered the following conclusions: Thyroidism is a complex of symptoms caused by faulty secretion of the thyroid gland. Besides the principal symptoms (heart, nervous and eye symptoms and goiter), intestinal symptoms (diarrhea, vomiting, etc.), and disturbances of metabolism (loss in weight) were very important; more so, as the latter might occur early in the course of the disease and might be more pronounced than the former. Therefore, the diagnosis in those cases where the intestinal symptoms predominated might be difficult and should be based upon accurate examination as to the existence of slight degrees of goiter, tachycardia and slight eye symptoms. As to treatment, surgical interference, if serum and medical treatment failed, would nearly always cure the intestinal symptoms; in fact, often earlier than the cardiac and eye symptoms. A suitable operation (ligation of the thyroid arteries, resection of the gland or enucleation of tumor from the gland) would be followed most frequently by a surprising gain in weight and would check the acceleration of metabolism with its tissue waste.

Dr. John P. Sawyer, of Cleveland, said that in view of the enormous frequency of thyroidism in the district in which he lived, and in other localities, he did not feel that it was warranted that operative interference should be too frequently recommended. He

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had seen instances where large goiters pressed on the trachea and gave rise to pronounced symptoms of obstruction; yet they receded and were symptomatically cured under medical treatment. On the other hand, he could recall a number of instances that were operated on with only temporary relief. He was convinced that the best method of treatment in these cases was not yet generally known, but in most instances he would have grave doubts about recommending thyroidectomy.

Dr. J. H. Stealy, of Freeport, Ill., said he had been on the lookout for cases of enlarged thyroid or hyperthyroidism for over twenty years, and up to ten years ago, in his section of the country, not 5% of these cases were ever diagnosed. Now about 60% were recognized. As to the operative treatment of these cases, he was in favor of removing the entire thyroid, with the exception of a small portion, say the size of a penny. He had removed the entire gland in a large number of cases, and up to the present time no symptoms of hypothyroidism had developed by leaving the parathyroids.

Dr. Ballin, in closing, said we should save as much of the thyroid tissue as possible. Nobody to-day was in favor of complete thyroidectomy, which would lead to myxedema. We should only tie as many arteries or remove as much of the gland as was necessary to overcome the symptoms.

### ACHLORHYDRIA HEMORRHAGICA GASTRICA AS A SYMPTOM OF CHRONIC GASTRITIS.

Dr. James Taft Pilcher, of Brooklyn, N. Y., read this paper, which gave the result of his investigations made in the pathologic laboratories at St. Mary's Hospital, in Rochester, Minn. He stated that there was a definite entity presented in the stomachs of some patients suffering from various intra- and extra-abdominal pathologic conditions, which was characterized by the absence of hydrochloric acid and the presence of "occult" blood. The condition was probably primarily affected through the agency of a reflex nerve stimulation, inhibiting first the production of free hydrochloric acid to only a moderate degree. This so modified the inhibiting factor of the gastric juice that the necessary conditions for the growth of pathogenic bacteria was furnished, chief among which were to be reckoned the streptococci and colon group, which were present in striking numbers. These direct irritants either themselves or in conjunction with the primary irritative factor, gallstones, appendicitis, pancreatitis, etc., perpetuated the pathologic process until there was an achlorhydria produced. It was most probable that to the erosion following this irritation the presence of blood might be ascribed. In the one hundred stomachs examined at operation, atrophy was never present, nor was there, excepting in one case, any evident insufficiency of the pylorus. There was a general symptomatology accompanying this condition which was very suggestive. The test meal recovered was indicative of the pathologic process in the stomach. There were indications in but seven cases observed that there was no secretion from the stomach mucosa. In others, the presence of mucus, the Biuret reaction and coagulation after activation would tend to show that there was still a moderate degree of enzymatic action. The cases were, therefore, not "achylia gastrica." Many instances were shown which illustrated the progressive, established or retrogressive stages of this condition. Proof of the etiological factors had been demonstrated in the cases operated upon, deduced from their prompt and permanent recovery. The condition was relatively common, approximately one in every fifteen stomach cases examined.

Dr. Max Einhorn, of New York, said that some years ago[1] he published his first article on "Clinical Observations on Erosions of the Stomach and Their Treatment," and five years later[2] his second article on "Further Remarks on Erosions of the Stomach" appeared. In those articles he reported a series of cases in which the presence of particles of gastric mucous membrane appeared in the stomach washings, and these, under the microscope, were found to contain glandular elements. In these cases, the absence of hydrochloric acid was also noted in some instances; in some there was complete achylia and in others hyperchlorhydria. In all of them there were various subjective symptoms of gastric origin, which, together with the small pieces of gastric mucosa, clearly indicated the presence of gastric erosions. The condition was found associated with catarrhal gastritis, sometimes of the alcoholic type. He never had a chance to get an autopsy on any of these cases because all of his patients recovered under treatment, but he did not doubt that a similar condition existed in association with other troubles.

Dr. John A. Lichty, of Pittsburgh, said the one point which interested him particularly in Dr. Pilcher's paper was the relatively large number of cases of achlorhydria or hypochlorhydria, and the few cases of achylia gastrica, and it seemed to him to be within the range of possibility that in the cases he examined the patients were under abnormal conditions and did not secrete their normal gastric juice. Probably, in many of them, serious operations were contemplated; they were in a more or less perturbed state of mind, and this might have disturbed the normal gastric secretions.

Dr. John P. Sawyer, of Cleveland, said it was well to keep in mind the fact that repeated examinations, at considerable intervals of time, were necessary in order to determine that given findings were essential or particularly peculiar to the pathological condition determined clinically, or perhaps afterwards recognized at post-mortem.

Dr. A. L. Benedict, of Buffalo, referred to the unreliability of the blood tests that were employed for occult blood. There were quite a number of different substances that would oxidize guaiac and other things, and some authors gave such a large list, including the ferments, starch, mucus and other substances liable always to be present, that it seemed we must check off our tests for occult blood before we could draw any reliable conclusions therefrom.

Dr. Pilcher, in closing, replying to Dr. Einhorn, said that in all the stomach washings he had made in these cases he had never been able to identify any cellular elements that could be referred to the stomach mucosa. He had never seen any clumps of cells or any cells which would in the least give one any idea of the condition of the gastric mucosa. As to the suggestion made by Dr. Lichty that the loss of acidity was possibly temporary and associated with a nervous condition of the patient, Dr. Pilcher said he did not think this was so. This so-called "nervous achylia" was very simply differentiated, and the experienced observer could in most cases tell immediately whether he was dealing with a real achylic stomach or a "nervous achylic" stomach if he would merely make a smear from his residue and stain it with any ordinary stain, and find out what the bacterial content was. In the normal stomach there were very few bacteria, and if we were dealing with a case of nervous subacidity or complete lack of acid due to the same cause, we would not find the enormous number of bacteria that were present in true achylia, nor would we find the pathogenic varieties

[1] N. Y. Med. Rec., June 23, 1894.
[2] Jour. Am. Med. Asso., May 20, 1899.

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which were so universally present under diseased conditions.

OBSERVATIONS OF THE VARIABILITY OF THE COMPOSITION OF THE GASTRIC JUICE.

Dr. E. L. Eggleston, of Battle Cheek, said that repeated test meals given the same individual under as nearly the same conditions as possible indicated a considerable variation in the acid and pepsin secretion, the secretion being no doubt influenced by psychic conditions. What might be termed the normal secretion in any individual fluctuated to a considerable degree, being influenced both by the mental condition and the kind of food taken. The state of mind — the mental condition — of the patient at the time of the test meal was decidedly unfavorable to normal digestion. As the ordinary test meal was not inviting, this also failed to arouse what Pawlow termed the "appetite juice," and the secretion obtained at the end of an hour might be very misleading. When possible, a specimen of the gastric contents should be taken after the patient had eaten of food that was appetizing and under pleasant conditions. Aside from the psychic influences which caused a variation in the composition of the gastric secretion, it was possible to greatly influence it by the kinds of food taken. It was possible in this way to greatly increase the secretion, or to reduce it almost to *nil*. The author summarized his paper as follows: (1) That with the same food materials there may be quite a marked variation in the percentage composition of the gastric juice, which will result from psychic influences. (2) Iced foods or beverages have only a slight inhibitory action on the gastric secretions. (3) Foods containing free fats in any quantity, when taken either at ordinary temperature or frozen, have a decided inhibitory effect on the gastric secretions. (4) Fruit juices, either frozen or at ordinary temperature, quite markedly increase the secretion. (5) Tincture of gentian compound seemed to have but little effect as a gastric stimulant.

Dr. J. C. Johnson, of Atlanta, said that, when we considered the personal equation and variations in the vital equilibrium, he did not doubt for a moment that we would find a considerable variation in the acid and pepsin secretion, even in the absence of any evidence of ill-health, but in order to determine the exact physiological value of such findings, they must be shown to be on an entirely physiological basis, and, at the same time, such findings must be more or less uniform.

The discussion was continued by Dr. Gustav Baar, of Portland, Ore., and was then closed by Dr. Eggleston.

SOME EXPERIENCES WITH THE EINHORN DUODENAL BUCKET.

Dr. W. G. Morgan, of Washington, D. C., in this paper, reported in detail nineteen cases in which he had used the Einhorn duodenal bucket for the diagnosis and localization of ulcers of the stomach and duodenum. He used both the thread test and the duodenal aspirator, and from his experience with these two methods he realized that Dr. Einhorn had given us means to employ which rendered the diagnosis in these cases comparatively easy and reliable. The application of the thread test was readily applicable to most cases, there being only here and there an individual who objected to the procedure. We could often watch the healing of the ulcer by the lessening of the length and amount of the blood stain upon the thread. Dr. Morgan said he had modified this test by substituting a small split shot inclosed in an ordinary gelatin capsule for the bucket devised by Dr. Einhorn, and he felt that it worked even better, as the patient seemed to experience less difficulty in swallowing it; furthermore, it cost much less to have a number of such tests going on at the same time. Dr. Morgan said that the number of latent ulcers, or ulcers giving few prominent symptoms, was larger than was thought, and that, by the systematic use of the thread test, many cases would be found that would otherwise escape recognition. The test, although sometimes disagreeable, was not seriously objected to and should be instituted at the faintest suspicion of ulcer. Besides being able to localize the ulcer, we were enabled to say with more certainty how the case was progressing and when the ulcer was probably cured.

Dr. Max Einhorn, of New York, said he had employed the thread test in over seventy cases of ulcer of the stomach and could subscribe to its usefulness. In cancer the method could be used advantageously in recognizing and localizing the presence of a growth; it did not tell us whether the growth was malignant or benign, but it indicated the site of the ulceration. He had also found it useful in cirrhosis of the liver, with varicosities and ulceration in the region of the cardia and lesser curvature, even before the occurrence of hemorrhage.

Dr. James T. Pilcher, of Brooklyn, said he had tried the Einhorn thread method as an aid to diagnosis in twenty-five cases of ulcer of the duodenum and in ten cases of ulcer of the stomach, as determined at operation by Dr. Mayo, and its localization of the ulcer in the cases in which he had employed it had not always been quite as definite as one might infer from listening to Dr. Morgan's paper. In the first place, in ulcerations of the duodenum, the bucket did not seem to get beyond the point of the ulceration. In four or five of his cases, however, the ulcer was definitely located by the thread and bucket method, as subsequently proven by operation.

Dr. Morgan, in closing, said that this test was still new and that it would take many hundreds of cases to properly estimate its value, but from his experience he believed it would prove to be one of the most valuable guides in the recognition of peptic ulcer.

HYPERACIDITY AND ABDOMINAL AND PELVIC SURGERY.

Dr. J. H. Carstens, of Detroit, said that cases of hyperacidity that were not relieved by ordinary treatment after a reasonable period of time should be subjected to an exploratory abdominal section, so that the exact diagnosis could be made. Sometimes the operation might fail to reveal the trouble, but in the vast majority of cases it would be found that there were adhesions of the gall bladder, stomach, intestines, appendix or pelvic organs which by reflex action produced that temporary condition which we called hyperacidity. The speaker said that while he discouraged indiscriminate operations as much as any one, he thought that the stomach specialist should make more frequent use of abdominal surgery, which was now free from danger, in obscure troubles of the digestive tract. Dr. Carstens offered the following conclusions: (1) Hyperacidity varied in different individuals. (2) Hyperacidity was a symptom, not a disease. (3) Hyperacidity was most frequently caused by reflex action. (4) Hyperacidity was probably due to irritation of the sympathetic nervous system. (5) Persistent hyperacidity should be cleared up by an exploratory abdominal section.

Dr. Allen A. Jones, of Buffalo, said that in considering this question we should be very careful in deciding what we meant by hyperacidity, and that it was an error to allow the patient to make the diagnosis for us. Many patients complained of extreme gastric

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acidity when they were not suffering from that condition at all. If we had a definite reason for feeling that the cause of the excessive acidity rested in some other organ than the stomach, such as the gall bladder or appendix, an operation was certainly indicated, but he protested against opening the abdomen with the idea, as Dr. McPhedran, of Toronto, had put it, of going on a roving expedition.

Dr. Gustav Baar, of Portland, Ore., said he had found that excessive indican in the urine was frequently associated with hyperacidity, and, when indicanuria was a constant symptom, he became convinced that it was an indication of the presence of an actual intra-abdominal lesion of the appendix or elsewhere.

Dr. J. C. Johnson, of Atlanta, said we either had to regard an excess of hydrochloric acid as an entity, or not regard it as such; it was either a disease or a symptom of a disease. In either case, the causes producing this pathological condition must operate in essentially the same way, and whatever the remedy might be, whether the knife, or alkalies, or diet, the essential cause must be removed by the employment of the same factors whose perversion led to its development.

### A CLINICAL STUDY OF 600 CASES OF COLITIS.

By Dr. George D. Kahlo, of French Lick, Ind. This paper embraced a résumé of 625 cases of chronic colitis, including both the inflammatory and secretory forms, the subject being treated entirely from the clinical standpoint. Statistics were given showing the sex, age, duration of the disease and the relative frequency of prominent symptoms, as also the occurrence of the more common complications. Errors in diagnosis often led to unnecessary surgical interference. The author believed that treatment should be directed to the local condition, as well as to the neurotic influences that had acted to produce the disturbed secretory function. In prescribing a diet, consideration should be given to disturbances of the digestive function and to the state of nutrition. The effect of mineral waters of the alkaline-saline group, both internally and locally, was also referred to, as were the influences of psychotherapy, massage and hydrotherapy.

Dr. John A. Lichty, of Pittsburgh, discussing the treatment of these cases, said he was a great advocate of the warm oil enema, but, more than that, he believed that the cure lay in the correction of the disturbance of nutrition, such as we often found associated with splanchnoptosis. If you fattened your patient and increased the amount of fat in the abdominal cavity, the mucous colitis would often disappear without any other treatment.

## Second Day, Tuesday, June 7.

### ON THE ADAPTATION OF THE HUMAN SALIVA TO DIET.

Dr. Lafayette B. Mendel, of New Haven, in this paper, said that the question of the adaptation of the digestive secretions to the character of the diet had been somewhat debated in recent years. It involved not only an important biological problem, but also suggestive practical considerations in relation to dietetics. Lately it had been reported, for example, that a forced diet of carbohydrates in man increased the content of carbohydrate-digesting enzymes in the saliva. The alleged similar adaptation in dogs had already been subjected to experimental investigation by the author and his colleagues with negative results. New experiments on man, under carefully selected conditions, had failed to show any correlation of enzyme concentration in the saliva with the dietary of the individual. Vegetarians furnished no specific exception in regard to ptyalin secretion. The author stated that his experience corresponded with the results just published by Carlson and Crittenden.

### FURTHER OBSERVATIONS ON ALCOHOLIC GASTRITIS AND ITS RELATION TO EXPERIMENTAL GASTRITIS IN ANIMALS.

By Dr. Nellis B. Foster, of New York. The author stated that alcoholic beverages, when constantly used to excess, as in the case of certain classes in large cities, was the cause of a gastritis which was well recognized clinically. The most prominent symptom of this condition was the retching occurring before the morning meal. When the digestive function of these individuals was examined, it was found that there was a diminution in the amount of hydrochloric acid secreted, which, in severe cases, was of such a degree that no free acid was demonstrable in the gastric contents. There did not appear to be a corresponding deficiency in the pepsin secretion. The second notable feature of this form of gastritis was the excessive mucous secretion. There was also to be observed in the majority of cases a decrease in the time that the food remained in the stomach. This had been interpreted as a functional compensation for defective peptic digestion, but might be explained in several other ways.

From the experimental point of view, it was relatively easy to induce in dogs a gastritis by means of dilute alcohol solutions. With dogs having the double stomach (Pawlow), observations might be made as to the effect of alcohol. The initial effect of alcohol was to call forth an increase in the amount of gastric secretion and of acid; if, however, the dose of alcohol be repeated for several days, there was apparent a failure of the stimulus, after a time, to produce the initial effect, i. e., increased secretion, and the amount of mucus secreted became more abundant. This sequence of events was in entire accord with physiological principles of response to stimuli. The ultimate result of oft-repeated excitation was an absence of response following an increased reaction. Applying this principle to the condition observed in animals, it followed that the initial increase of gastric secretion would be of brief duration and then the gastric glands would become more and more refractive to stimulation, as was the case. Ultimately, there would arrive a time, were it possible to continue the experiment over sufficient time, when it seemed most probable that an atrophic gastritis would result. A gastritis marked by much diminished secretion and abundant mucus Dr. Foster said he had noticed in dogs as a sequence in other experiments, and in this state the food remained in the stomach for a briefer period than normal.

Dr. Julius Friedenwald, of Baltimore, said that about five years ago he published a paper on the pathologic effects of alcohol on rabbits, the work being done in the Pathological Laboratory of the Johns Hopkins University and Hospital, and the results of his work corresponded very closely to those reported by Dr. Foster. The quantity of alcohol taken by the rabbits varied very much according to the size and strength of the animal; certain rabbits were found to be so resistant that they seemed capable of tolerating daily intoxicating doses for an indefinite period.

Dr. G. H. Benton, of Chester, W. Va., said that Dr. Foster spoke of stimulation in reference to the effect of alcohol on the gastric mucosa. The speaker thought this should be regarded as an irritation rather than stimulation. This particular application of alcohol produced an excretion of a thick, tenacious mucus, which was nature's way of protecting the mucous membrane of the stomach.

The discussion was continued by Drs. Lichty

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Johnson, Benedict, Charles D. Aaron, of Detroit, and Nathan Rosewater, of Cleveland.

ANTHROPOMETRIC STUDIES OF THE OSSEOUS PROPORTIONS OF THE HUMAN BODY: WITH A VIEW TO OBTAINING A MATHEMATIC EXPRESSION FOR ENTEROPOSIS.

Dr. John C. Hemmeter, of Baltimore, said that enteroptosis was not an abnormality limited exclusively to displacements of the abdominal viscera, but that the thoracic organs were also displaced as far as the diaphragm and the osseous limitations of the thorax would permit it. By radiographic and other methods of investigation the author had become convinced that enteroptosis was an expression of a general osseous, visceral, nervous and vasomotor abnormality. Acquired enteroptosis was comparatively rare, and then only showed displacements in a few organs of the abdomen. In the acquired form, the thoracic organs, as a rule, were in normal position, and the osseous anthropometric proportions of the body were not found to be deviated from the normal, while in the inherited and more frequent type the thoracic organs were rarely in normal position; there were always several abdominal organs out of position, and the osseous proportions were decidedly abnormal.

Dr. Johnson said he was struck by the frequency with which Dr. Hemmeter had observed displacements of the thoracic organs. In his own observations, which were confined more especially to the abdominal organs, he had never yet failed to recognize some displacement or rather lack of proportion between the thoracic and abdominal organs in patients with enteroptosis or gastroptosis.

Dr. Gustav Baar said he was convinced that most cases of enteroptosis were acquired. The condition was rarely observed in children, at least in his experience, and he believed that the chief causative factor was the pressure of the corset in women or the trousers' strap in men. He believed that very few of these cases were congenital, and that ptosis of the thoracic organs was very rare compared with ptosis of the abdominal organs.

The discussion was continued by Drs. Friedenwald and Pilcher.

CHYLOUS CYST OF MESENTERY.

Dr. A. L. Benedict, of Buffalo, presented a report on a case of chylous cyst of the mesentery in a boy of six years, who was operated on by Dr. Charles E. Congdon. So far as the writer could ascertain, no other case had ever been recognized in Buffalo, although chylous ascites and chylo-thorax had. The largest series of cases in the literature hitherto amounted to 25. Dr. Benedict had, thus far, collected about 65 cases, and had found 3 cases prior to Rokitansky's, in 1848, which had previously been supposed to be the first authentic one. Two indubitable cases were found in the reports of the Paris Academy in 1710 and 1727.

It had been declared that sugar was an essential constituent of genuine chylous effusions, Senator being quoted as authority. Dr. Benedict's case yielded no sugar, and he showed that Senator had been misquoted as considering sugar as anything more than a usual constituent; that sugar had been absent in other cases, and that, on purely physiologic grounds, it could not be considered an essential ingredient. A study of the etiology showed that obstruction of the receptaculum and thoracic duct was rarely a cause, and that, indeed, such obstruction would tend to immediate chylous ascites or chylo-thorax; also, that the theory of embryonal rests was not supported by conclusive histologic evidence. From experimental results it seemed possible that any rise of abdominal pressure might operate, if not to produce the original cavity, at least to cause the development of a macroscopic cyst. Hence, the rather characteristic history of colicky pains might have both a diagnostic and an etiologic bearing, though the frequency of such pains in their association with cyst was too slight to let such a history influence us, excepting in a suggestive way. The physical diagnosis of abdominal cysts, by auscultatory percussion, tuning fork percussion, transillumination, etc., and the exclusion of certain common types of abdominal tumor were discussed. Without claiming that a positive diagnosis could be made, Dr. Benedict thought that in favorable cases operation could be undertaken with the fairly positive diagnosis of some sort of cyst, with the probable diagnosis of mesenteric cyst, and with at least the knowledge that there was such a thing as chylous cyst of the mesentery.

Dr. George W. McCaskey, of Fort Wayne, referred to a case which he saw about twenty years ago in which he made a diagnosis of pericardial effusion. This seemed justified by the muffled heart sounds and by the outline of the cardiac dullness given by percussion. A paracentesis was done, and chylous fluid was obtained. He believed the case was one of chylous pericardial effusion.

Dr. C. F. Korssell, of Chicago, reported in detail a case of chylous ascites in combination with multiple small chylous cysts. The largest cyst formation was found between the layers of the peritoneum in the transverse mesocolon, holding over one quart of oily chyle.

Dr. Benedict, in closing, said that, in a recent review of the subject, he found a record of two cases of chylous cyst of the pericardium.

THE CLINICAL FEATURES OF METASTASES INVOLVING THE NERVOUS SYSTEM SECONDARY TO CANCER OF THE STOMACH.

Dr. Henry L. Elsner, of Syracuse, said that metastases due to malignant disease of the stomach and intestines as they involved the nervous system were exceedingly rare; not so rare, however, as had been supposed in the past. Thorough search would frequently uncover clinical manifestations which made their presence positive. These conclusions were confirmed by post-mortem findings. In occasional cases, metastases of the spine, brain and periphery caused such intense suffering, and their symptoms were so prominent, as to mask partially or entirely the primary growth in the stomach or intestines. Cancers of the stomach might be so localized as to give rise to a few symptoms, while metastases springing from such growths might invade the nervous system, particularly the spine, and lead to a definite train of symptoms. Cancer of the stomach, more particularly, might remain latent during a number of years, during which time metastases followed which might occasionally invade the nervous system. It was important to differentiate the various manifestations associated with pernicious anemia, included under the "*Lichtheim symptoms*," and those due to invasion of the central nervous system, particularly the spine, secondary to cancer of the stomach or intestines.

THE RELATION OF GALL-BLADDER AND DUCT DISEASES TO GASTRIC FUNCTION, BASED UPON CLINICAL AND EXPERIMENTAL OBSERVATIONS.

Dr. J. A. Lichty, of Pittsburgh, read a paper on this subject, in which he offered the following conclusions: (1) A lesion of the gall bladder and ducts may

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disturb gastric function. (2) This disturbance may consist of a hypersecretion of gastric juice, especially of the hydrochloric acid, and a diminution of gastric motility, and was in direct proportion to the extent of the pathology present. (3) So-called hyperchlorhydria should be looked upon as a symptom of some organic condition somewhere along the gastro-intestinal tract, and should be treated symptomatically only when organic disease could be excluded with a satisfactory degree of certainty. In the experimental work referred to by Dr. Lichty, it was attempted to show in dogs whose normal gastric secretion had been determined, that by placing infected foreign bodies into the gall bladder, a condition similar to cholelithiasis in the human being occurred, and a change in the gastric secretion and motility took place, much as was found clinically.

Dr. Allen A. Jones said that in not a few instances he had found that definite disturbances of secretion — not necessarily hyperchlorhydria — or of motion were associated with gall-bladder disease. Furthermore, he agreed with Dr. Lichty that extensive or quite marked morbid conditions of the gall bladder, especially pericholecystitis with adhesions, were not infrequently associated with gastric disturbance. On the other hand, there were cases in which the cause of the gastric symptoms lay in the stomach itself rather than in a morbid condition of some of the other abdominal organs. We should also bear in mind that two or more morbid conditions may exist in the abdomen; the patient may have appendicitis or cholecystitis, and may also have an abnormal condition of the pylorus.

Dr. Fenton B. Turck, of Chicago, said he had no doubt that the infection of the gall bladder in dogs produced by placing an infected foreign body into that organ influenced the secretion and motility of the stomach, but whether there were other factors associated with this had not been touched upon in this research by Dr. Lichty.

Dr. J. C. Johnson said that in dealing with cases of gallstones and gall-bladder adhesions, we all knew that these conditions produced a certain train of symptoms, but what we wanted to learn was, How did they do it, and, Why did they do it? Before gall-bladder trouble, appendicitis or anything else could produce hyperchlorhydria, there must be a disturbance in metabolism of the secretory cells of the stomach.

Dr. C. F. P. Korssell, of Chicago, said he had almost invariably found that patients with enteroptosis also suffered from hyperchlorhydria and indicanuria. By keeping this fact in mind, he had relieved many patients who were not benefited by having their appendix removed, or their Fallopian tubes amputated, or their uterus curetted, etc.

Dr. James T. Pilcher, of Brooklyn, called attention to the fact that we might have these gastric disturbances due to impaired metabolism of the nerve structures. That was really an organic condition; not merely a functional one. We might have an actual change in the nerve, and in that case it could not be regarded as a functional hyperchlorhydria.

Dr. John P. Sawyer, of Cleveland, said that hyperchlorhydria seemed to be regarded by many as a continuing expression of an established disorder. Ought we, however, to regard it in that light? Hyperchlorhydria might be present for a considerable length of time in a given patient under a given set of conditions; at another time it might be absent, and the same patient may have an achlorhydria or a hypochlorhydria. We may have tremendous excursions in this respect due to psychical phenomena.

The discussion was continued by Drs. Benedict and Friedenwald, and was closed by Dr. Lichty.

REPORT OF A CASE OF INOPERABLE CARCINOMA OF THE SPLENIC FLEXURE OF THE COLON TREATED WITH NEOFORMANS VACCINE.

By Dr. Charles D. Aaron, of Detroit. The case was one of tumor on the left side of the abdomen which upon exploratory incision proved to be inoperable. Under the use of neoformans vaccine there was an apparent disappearance of the growth and an improvement in all the symptoms.

SOME OBSERVATIONS AND MODIFICATIONS ON THE SCHMIDT TEST DIET.

By Dr. G. W. McCaskey, of Fort Wayne. The author suggested three slight modifications in the Schmidt test diet. One was the advantage which might be gained by introducing into the diet very small cubes of raw meat which had been soaked in carmine solution for twenty-four hours. These might pass through the stomach in case the latter could not digest the connective tissue, and could be readily recognized macroscopically in the feces as small, red masses. He also advised repeating the test with one half the quantity, approximately, perhaps, 1,200 calories, and if we still got the same results, it would give us a clearer indication in regard to functional impairment. The third modification he suggested was to make it more inviting and palatable by substituting for the purées, gruels, etc., properly prepared potatoes and cereals.

THE RÔLE OF THE BACILLUS COLI COMMUNIS IN DISEASE.

Dr. Fenton B. Turck, of Chicago, in this paper, presented some interesting facts on the rôle of the bacillus coli communis in the gastro-intestinal tract in producing lesions in the liver, kidney, stomach and other organs.

## Book Review.

*Tropical Medicine and Hygiene.* By C. W Daniels, M.B. Cantab., M.R.C.P. Lond. In three parts, with colored and other illustrations. Part II: Diseases Due to the Metazoa. New York: Wm. Wood & Co. 1910.

The absence of Major Wilkinson from England made it impossible, according to the statement in the preface, for him to share in the preparation of this second volume of the work, in the first part of which he was collaborator. The book nevertheless fully maintains the high standard of excellence set by the first volume [reviewed in the Journal for June 2, 1910]. The second part treats of the metazoan diseases, notably filariasis, trichinosis, ankylostomiasis, myiasis and infections with tapeworms and round worms. In addition there is an admirable chapter on "Snakes and Snake-Venoms" by Lt.-Col. A. Alcock, M.B., LL.D., F.R.S., describing in brief but attractive and complete form the zoölogical characteristics and classification of snakes, the nature of the venoms in the poisonous species, and the general and specific methods of the treatment of snake-bite. This volume should be of special value both to students and to practitioners, and Dr. Daniels and Dr. Alcock are to be congratulated on its successful completion.

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THE BOSTON

Medical and Surgical Journal.

THURSDAY, OCTOBER 6, 1910

*A Journal of Medicine, Surgery and Allied Sciences, published at Boston, weekly, by the undersigned.*

Subscription Terms: $5.00 *per year, in advance, postage paid, for the United States, Canada and Mexico;* $6.50 *per year for all foreign countries belonging to the Postal Union.*

*All communications for the Editor, and all books for review, should be addressed to the Editor of the Boston Medical and Surgical Journal, 809 Paddock Building, 101 Tremont Street, Boston.*

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## PROGRESS OF THE EUROPEAN EPIDEMIC OF CHOLERA.

In the issue of the Journal for Sept. 15 we made editorial comment on the source and modes of diffusion of the present European epidemic of Asiatic cholera, and on the measures taken in different countries to prevent its further spread. Since that time the disease has shown little sign of abatement, either in Russia, its primary stronghold, or in Italy, its secondary seat of invasion. Reports from Russia state that, in the week of Sept. 17 to 23, there were in that country 3,038 new cases and 1,474 deaths. During the same period there were in the single province of Amur, Siberia, 26 new cases and 12 deaths. Six cases have occurred at Ferghana, Turkestan. During the week of Sept. 23 to 30, there were 215 new cases in St. Petersburg alone, with 80 deaths, and 393 cholera patients remaining in hospital. Statistics of the Russian sanitary bureau show that since the outbreak of the epidemic there has been a total of 198,246 cases in the empire and 92,329 deaths. These appalling figures, representing the possibilities of pestilential devastation in a country calling itself civilized, further justify our recent characterization of Russia as "medieval in her attitude toward such infections as cholera."

In Italy the situation is somewhat better, though approximately 1,000 persons are said to have died of cholera during the month of September in the region about Naples, where the epidemic has its focus. Latest reports state that on Sept. 27 there were 32 new cases and 22 deaths in the city of Naples, and on Sept. 28, 15 new cases and 9 deaths. At Rome there are said to have been in all only 4 cases and 1 death, the disease being principally confined to southern Italy.

So extensive an epidemic is, of course, a grave menace to adjacent countries and, to a less extent, to those more distant which maintain maritime intercourse with the infected cities. There seems to have been considerable carelessness on the part of Italian officials in guarding against both the importation and the exportation of the disease, and possibly even deliberate concealment of the facts of its prevalence for supposed economic and commercial reasons. The efficacy of intelligently practised measures of sanitary prophylaxis is illustrated by the fact that the other nations of Europe have nevertheless thus far kept themselves free from invasion by the disease. In America the principal risk is from unrecognized cases developing on shipboard after sailing from an infected port, or from "cholera carriers." Stringent measures are being taken by our national authorities and by those of the seaboard states to forestall such possibilities. Emigrants embarking from Naples and Genoa are detained in quarantine, prior to sailing from those ports, for five days, the maximum incubation period of the disease, and, in addition, are subjected to rigid examination on arrival in the United States. American and other steamers have been warned against touching at Naples. Dr. King, of the United States Public Health and Marine-Hospital Service, has been detailed to inspect also the port of Palermo, from which emigrants from the infected districts may sail for this country.

The advent of cold weather and the gradual awakening of official activity will doubtless before long put an end to the Italian epidemic. Meantime vigilant application of recognized principles of prophylaxis should keep America secure from infection by Asiatic cholera from European sources.

## NOTES ON THE TUBERCULOSIS CAMPAIGN.

Some medical problems come and go, but the fight against tuberculosis bids fair to go on forever, or until the millennial day of the completely immune race. Meanwhile there are from time to time encouraging tidings of progress in the conflict. The recently published fifth annual report of the associated committees of The Massachusetts Medical Society for the prevention and control of tuberculosis contains account of the opening and valuable service of the three new state sanatoria for consumptives, providing for 850 patients in addition to those accommodated at Tewksbury; of the opening of the new consumptives hospital at Lawrence, Mass., and of the

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outdoor camps at Adams, Mass., and at Quincy, Mass. The reports of the several district committees present also interesting data of the work being done in every part of the state. So aggressive and vigorous a campaign can hardly fail of good results. The chairman's report emphasizes furthur desiderata for the future, particularly the need of getting cases under observation earlier in the course of the disease. In a recent letter to the Mayor, Mr. Edward F. McSweeney, chairman of the board of trustees of the Boston Consumptives Hospital, makes similar comment, and suggests the desirability of a more systematic examination of school children in Boston for the detection of incipient tuberculosis and of conditions predisposing to tuberculosis. He also points out the necessity of suitable provision of occupation and environment for arrested cases, to prevent their relapse after supposed cure.

This suggestion calls to mind the valuable possibilities of the Prendergast Camp near Mattapan, conducted by the Boston Association for the Relief and Control of Tuberculosis. The object of this camp is "to offer to men, whose tubercular process has been arrested, a place where they may live under the most favorable conditions." It is intended primarily for recovered cases who have returned to work, but a few incipient or quiescent cases will also be received under suitable precautions. The camp is intended neither for profit nor for charity, but merely to be self-supporting; and a board-rate of $6.00 a week is, therefore, charged. Patients in the camp remain under the care of their own physicians. Applications for admission should be made to the Secretary of the Association, Mr. Seymour H. Stone, 4 Joy Street, Boston. It is provisions such as these that make one hopeful of the outcome in the conflict with tuberculosis, even though the campaign promise to be long and difficult.

## MILK TRANSPORTATION RATES.

Since the settlement of the milk strike in Boston last spring, we have been happily delivered from apprehensions of a milk famine, and the season has passed without the threatened failure in quantity or quality of the supply. Problems in connection with the price and transportation of milk, however, still remain to be solved, and work on these has been continued through the summer. On Sept. 28 was held the last of a series of hearings before the Interstate Commerce Commission relative to the present shipment rates. Following the termination of the strike in June, there were some changes in the rates charged by certain railroads for the transportation of milk. Against these changes the contractors protested, and the matter was referred to the Commission for investigation. Both sides have presented figures, the one to show that the present rates mean financial loss to the dealers or an increase in price to the consumers; the other to show that lower rates mean loss to the railroads. The question really at stake is the state regulation of methods and cost of milk transportation. Whatever the decision of the Commission on this point, there seems likely to result, in the near future, an increase in the price of milk supplied to the Boston market.

## MEDICAL NOTES.

### BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston.—For the week ending at noon, Sept. 27, 1910, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 44, scarlatina 11, typhoid fever 26, measles 4, smallpox 0, tuberculosis 43.

The death-rate of the reported deaths for the week ending Sept. 27, 1910, was 17.42.

Boston Mortality Statistics.—The total number of deaths reported to the Board of Health for the week ending Saturday, noon, Oct. 1, 1910, was 218, against 183 the corresponding week of last year, showing an increase of 35 deaths, and making the death-rate for the week, 16.95. Of this number 120 were males and 98 were females; 210 were white and 8 colored; 148 were born in the United States, 70 in foreign countries and 0 unknown; 52 were of American parentage, 139 of foreign parentage and 27 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 34 cases and 2 deaths; scarlatina, 22 cases and 0 deaths; typhoid fever, 16 cases and 4 deaths; measles, 3 cases and 0 deaths; tuberculosis, 66 cases and 16 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 22, whooping cough 0, heart disease 23, bronchitis 5. There were 10 deaths from violent causes. The number of children who died under one year was 59; the number under five years, 72. The number of persons who died over sixty years of age was 57. The deaths in public institutions were 87. Cerebrospinal meningitis, 1 case and 1 death. Anterior poliomyelitis, 2 cases.

Of the above infectious diseases the following

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were non-residents: Consumption, 1 case. Scarlet fever, 1 case. Typhoid fever, 1 case and 1 death.

Deducting deaths of non-residents, the total is 191 and the death-rate is then 14.85.

Harvard Medical and Dental Schools. — The Harvard Medical School opens the new year with 267 students, 13 less than last year. The Dental School begins the year with 106 students, 21 more than last year.

United Drug Convention. — The annual convention of stockholders of the United Drug Company, held in Boston last week, was attended by nearly one thousand representatives, coming from every state in the Union, and from Canada. At the sessions questions of the preparation and sale of drugs and of the policy and government of the company were considered. It was unanimously voted that the next convention be held at Richmond, Va.

Ether Day at the Massachusetts General Hospital. — Members of the medical profession are invited to attend the Ether Day exercises to be held at the Massachusetts General Hospital on Oct. 15, 1910, at 4.30 P.M. The address will be by Dr. George W. Crile, of Cleveland, Ohio. Admission will be by ticket only. Application for tickets should be made to Dr. Frederic A. Washburn, Resident Physician.

Retirement of Dr. Austin Peters. — The Daily Press announces the appointment by Governor Draper of Mr. Walker, a farmer of Burlington, Mass., to succeed Dr. Austin Peters, the present chief of the Cattle Bureau. With the well-recognized importance to the human race of protection from the diseases of the domestic animals, this change is most unfortunate. Dr. Peters has and deserves the confidence of the medical profession.

Boston Hospital Concerts. — The first of this season's series of concerts, provided by the Boston Hospital Music Fund, was given on Sunday, Oct. 2, at the Home for Aged Women, Revere Street. Further concerts will be given during the current month, as follows: On Oct. 9, at the Home for Aged Couples, Roxbury; on Oct. 16, at the Cushing Hospital, Roxbury; on Oct. 23, at the Woman's Charity Club Hospital, Roxbury; on Oct. 29, at the Boston State Hospitals for the Insane; and on Oct. 30, at the New England Baptist Hospital, Roxbury.

Illegal Sales of Milk and Cocaine. — In the Roxbury district court last week three dealers of that region, whose licenses to sell milk had been previously revoked for disobedience to the regulations of the Board of Health, were fined $50 each for continuing to offer milk for sale. In the Boston municipal court, Carl Foley was found guilty of having made an illegal sale of cocaine in Boston on Sept. 9, and was sentenced to imprisonment for four months. Rigorous enforcement of food and drugs laws is essential for the public safety.

Abolition of Public Drinking Cups in Massachusetts. — The new regulation of the Massachusetts State Board of Health, prohibiting the use of common public drinking cups throughout the state, became operative on Oct. 1. This law applies to schools, hotels, theaters, halls, railway stations and other public buildings, to parks and highways, and to railroad cars, boats and other public conveyances. It is gratifying that Massachusetts has so soon followed the lead of other states in this desirable measure of hygienic reform.

Oyster Beds Condemned in Rhode Island. — Report from Providence, R. I., states that on Sept. 27 the Rhode Island Board of Shellfish Commissioners condemned 275 acres of oyster beds at Bristol, in that state, as unfit for use on account of pollution by sewage from the city. It is matter of congratulation, not only to residents of Rhode Island, but also to oyster consumers elsewhere, that their interests are being so observantly safeguarded by local authority.

Poliomyelitis in Rhode Island and Vermont. — In the issue of the Journal for Aug. 25, we noted the appearance of epidemic poliomyelitis in Providence, R. I. Recent report states that during the months of August and September there were 81 cases in that city, with 9 deaths. Ten cases have occurred in Newport, R. I. The total number of cases reported to the Rhode Island State Board of Health since June 1 is 163. Report from Montpelier, Vt., states that there have been upwards of a dozen cases of poliomyelitis in that state this summer, with 2 recorded deaths. The progress of these minor epidemics, *pari passu* with the more extensive one that has prevailed in Massachusetts, emphasizes the unquestionably infectious nature of the disease and the importance of its continued clinical and experimental study.

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American Association of Clinical Research. — The second annual convention of the American Association of Clinical Research was held last week in Boston in the building of the Society of Natural History. Among the papers presented was one by Dr. E. S. Bailey, of Chicago, on "Research Work in Radio-Activity"; one by Dr. R. R. Smith, of Boston, on "Research Work in Mechanical Therapeutics"; one by Dr. C. H. Wintch, of Newark, N. J., on "Turpentine Poisoning"; and one by Dr. L. V. Briggs, of Boston, on "Recent Researches in Mental Medicine." A report was made by Dr. W. H. Ketchum, of Hopkinsville, Ky., on the use of the hypnotic state in diagnosis, furthur consideration of which was deferred till the next convention. Dr. A. R. Peebles, of Boulder, Col., was elected president for the ensuing year; Dr. I. S. Wile, of New York City, and Dr. J. F. Cobb, of Chicago, vice-presi-presidents; and Dr. James Krauss, of Boston, secretary and treasurer.

NEW YORK.

Rats and Mice and a Strike. — A strike is threatened among the stenographers and other female employees at the Capitol in Trenton, N. J., because the State Department of Health, having, after some difficulty, secured the necessary permission, is about to establish, on the roof of the building, quarters for rats and mice, among other animals, kept for experimentation.

An Evasion of Requirements to Practice. — Justice Hendrick, of the New York Supreme Court, has signed an order denying the application of a certain physician who passed the New Jersey examination, and is licensed to practise in that state, for a writ of mandamus compelling the regents of the University of the State of New York to admit him to the practise of medicine in New York. The regents had refused his application on the ground that he took two out of the four years' college attendance required by law at the Boston College of Physicians and Surgeons, an institution not registered with the board of regents as having a sufficiently high standard of instruction, and that it would simply be an evasion of the requirements to allow him to practise by way of comity with the state of New Jersey.

The Entering Class at Columbia. — The opening exercises of the medical department of Columbia University (the College of Physicians and Surgeons) were held on Sept. 29. There was a slight falling off in the registration, the first-year class showing an enrollment of 75, as against 90 in 1909, a circumstance attributed to the more rigid requirements which went into force the present year. The address on this occasion was by Dr. William G. MacCallum, professor of pathology, who took for his subject, "The Future of Medicine." In the course of it he expressed the opinion that the physician of the future would be employed principally to prevent disease, not to cure it, and he urged that marriages of deaf mutes, imbeciles, epileptics, degenerates and defectives in general should be prohibited by statute.

The Strauss Milk Charity. — The regular summer stations of the Strauss Milk Charity have already been closed, but, in consequence of the appeals made to him, Mr. Strauss has decided to keep the seven stations from which pasteurized milk has been dispensed throughout the year in operation until Nov. 1. By that time the committee of which Mrs. J. Borden Harriman is chairman, it is expected, will have completed a plan to carry on the work heretofore conducted by Mr. Strauss under his own name. On behalf of the latter it is stated that while he is unwilling to bear the brunt of such opposition as in the past has been directed against him personally, he would lend any substantial financial backing to this charity if it were carried on in the name of a committee or organization. It is also stated that Health Commissioner Lederle has expressed much interest in the proposed undertaking, and that to the original committee have been added the names of some forty persons, many of them representing charitable organizations.

Unexpected Result of Campaign against Impure Milk. — One rather unexpected result of the campaign against impure milk which has been carried on of late in the city has been, it is found, that in quite a large number of instances, mothers of the tenements, in their efforts to save their children from the ill-effects of bad milk, are now trying to eliminate milk from the family diet and are substituting tea and coffee in its place. To such an extent has this reactionary movement spread that the consumers' section of the New York Milk Committee has deemed it necessary to come to the defense of milk, and has accordingly issued for distribution a pamphlet, bearing the names of Dr. Harvey W. Wiley, of the Agricultural Department's Bureau of Chemistry; Dr. H. C. Sherman, of the Department of Chemistry, Columbia University; Dr. Ira S. Wile, of the Department of Diseases of Children, Vanderbilt

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Clinic, and others qualified to speak with authority on the subject, which warns the mothers against coffee and tea, and sets forth the nutritive value of milk and its peculiar adaptedness for the wants of infants and young children.

## Current Literature.

### Medical Record.

Sept. 24, 1910.

1. *Kakels, M. S. *A Preliminary Report on Ehrlich-Hata's Preparation for the Cure of Syphilis.*
2. Bassler, A. *A New Method of Treatment for Chronic Intestinal Putrefactions by Means of Recial Instillations of Autogenous Bacteria and Strains of Human Bacillus Coli Communis.*
3. Eshner, A. A. *A Possible Second Attack of Acute Anterior Poliomyelitis in the Same Patient.*
4. Spingarn, A. *A Brief Report of Three Unusual Cases of Retropharyngeal Abscess.*
5. Evans, W. A. *Library Ventilation.*
6. Loveland, B. C. *Psychotherapy: Its Place; Its Uses.*
7. Persson, G. H. *Culture of Lactic Acid Bacillus in the Treatment of Chronic Specific Urethritis. A Preliminary Report of Thirty-four Cases.*
8. Nascher, J. L. *A Plea for the Study of Geriatrics.*
9. Bass, C. C. *A Practical Inexpensive Aseptic Blood-Sticker.*

1. Kakels reports two cases of tertiary syphilis, which had resisted all other treatment, in which astonishing improvement has followed in one week the subscapular injection of 0.3 gm. of Ehrlich's already famous No. 606. The writer is enthusiastic over the prospects of the new remedy. [L. D. C.]

### New York Medical Journal.

Sept. 24, 1910.

1. Cheatham, T. A. *Ambulance Surgery — Its Problems.*
2. Hays, H. *Epistaxis in Its Relation to Various Constitutional Diseases.*
3. Hogan, J. B. *Ether.*
4. Goldberger, M. F. *Observations on the Treatment of Peritonitis.*
5. Casamajor, L., and Karpas, M. J. *The Munich Psychiatric Course of 1909.*
6. Sallom, A. K. *Standardization of Blood Pressure.*
7. Lydston, G. F. *Dr. Pohly's Cases of "Anemic Ulcer" of the Throat.*
8. Knott, J. *Aconite.* [L. D. C.]

### The Journal of the American Medical Association.

Sept. 3, 1910.

1. *Hoover, C. F. *A Criticism of the Blood Pressure Apparatus.*
2. Lange, S. *Pathology of Mastoiditis as Revealed by X-Ray.*
3. Cheney, H. W. *Continued Subnormal Temperature in Infancy.*
4. Mygind, H. *In Memoriam. Wilhelm Meyer.*
5. *Matthews, J. *Operations on the Vocal Cords in One Thousand Cases of Goiter.*
6. Fell, G. E. *Currents at the Eastern End of Lake Erie and Head of Niagara River. Their Influence on the Sanitation of the City of Buffalo.*
7. Dutton, W. F. *Present-Day Problems and Progress in Prevention of Typhoid Fever.*
8. Kelley, S. W. *Surgical Mistakes in Infancy and Childhood.*
9. *Waugh, J. F. *Results of Experience with Noguchi Modification of the Wassermann Sero-Diagnosis Test for Syphilis.*
10. *Corbus, B. C. *Two Years' Experience with the Wassermann Reaction in Practice. A Preliminary Report on Fifty-seven Cases.*
11. Mauken, G. H. *Treatment of Stammering.*
12. Claybrook, E. B. *A Case of Opium Poisoning.*
13. Davenport, H. I. *Notes on Certain Tests for Indican in the Urine.*
14. Cooper, C. M. *Succussion Splash in Diverticulum of the Esophagus.*

1. Hoover does not decry the use of the blood-pressure apparatus, but thinks, however, that no instrument is as valuable as the educated finger. He advises the use of the femoral rather than the radial or brachial for palpation.

5. Matthews, examining one thousand cases of goiter, finds that the average frequency of symptoms of pressure on the nerves was directly proportional to the size of the lobes. Exceptions came in small hard lobes which are even more apt to harm nerves than large soft ones. The position of the lobe is important, those situated nearest the clavicle giving the most trouble. Men are about three times as liable as women to paralysis from goiters of the same type. Operation relieves those in which the pressure has not been long enough to produce degeneration of the nerves. Early laryngoscopic examination and operation may prevent complete paralysis.

9. Waugh concludes that in serum diagnosis of syphilis a positive result is an indication that the disease is still active and that more treatment is necessary. One negative result should not suffice in any suspected case of syphilis. The test should be repeated at intervals of six months for the first year after all treatment is discontinued, and afterward at longer periods. In quite a large percentage of cases two years of specific treatment is not sufficient to insure a negative result from the test. The tendency at the present time is to under-treat rather than to over-treat these cases. The Wassermann reaction is of inestimable value in obscure cases of syphilis and in differential diagnosis.

10. Corbus is enthusiastic over the Wassermann test, which he has used for two years as the original test without modification. It is especially valuable as a guide to treatment. We may now begin treatment early, energetically and watch our results with exactness. [E. H. R.]

Sept. 10, 1910.

1. Ormsby, O. S. *Lichen Planus Sclerosus et Atrophicus (Hallopeau). A Report of Six Cases (Five New). With a Review of the Literature.*
2. Sharber, A. L. *Report of a Case of Intussusception.*
3. *Dyer, I., and Hopkin, R. *Diagnosis of Leprosy.*
4. *Somers, L. S. *Significance of Edema of the Soft Palate.*
5. *Hartz, H. J. *Ultimate Results in Treatment of Pulmonary Tuberculosis with Mercury Succinamid.*
6. Marcy, H. O. *Plastic Surgery of the Pelvic Structures.*
7. *Wilson, L. B., and Willis, B. C. *Pathologic Relationship of Ulcer and Carcinoma of the Alimentary Canal.*
8. Bandler, S. W. *An Ideal Operation for Total Prolapse of the Uterus.*
9. Horn, H. *The Bronchoscopic Treatment of Bronchial Asthma.*
10. Morse, J. L. *Agar-Agar in the Treatment of Constipation in Childhood.*
11. Potts, C. S. *The Practical Uses of Electricity in Medicine.*
12. Bass, C. C. *Climatic Treatment of Pellagra.*
13. Wiles, G. M. *Parsimony in Nutrition.*
14. Matthews, A. C. *A Case of Fracture of the Thyroid Cartilage with Prompt Recovery.*

3. Dyer and Hopkins give an excellent review of the symptoms and lesions produced by the lepra bacillus. They plead for a more intimate knowledge by the general practitioner, as cases are becoming more common in this country. The great trouble in diagnosis lies in the number of atypical cases. A change in type from the tubercular to the anesthetic form may take place, or the two may occur together. These variations are not often enough recognized.

4. Somers states that edema of the uvula may occur as a traumatic lesion from over or improper use of the

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voice. It is often a prodromal symptom of acute articular rheumatism. In chronic specific infections, as tuberculosis and syphilis, it may occur late and is significant of grave local lesions and destruction of tissue. It may be the only symptom of approaching uremia. It is rare in acute nephritis, but occurs in scarlet fever as a sign of profound intoxication.

5. Hartz selected twenty cases of non-active, chronic and generally favorable tuberculosis of the lungs for a trial of the mercury succinamid treatment advocated by Wright, U. S. N., and found that, although they showed a temporary improvement, yet all eventually began to deteriorate almost in direct proportion to the number of injections they had received. The deterioration was more marked and rapid than in others who had not had the mercury. He therefore concludes that mercury as recommended by Wright has utterly failed as a specific agent in the treatment of pulmonary tuberculosis, and is positively injurious to the patient.

7. Wilson and Willis, from the examination of operation specimens, conclude that the relationship to cancer of simple chronic irritation of the unbroken free surface of the mucosa of the alimentary canal, as indicated by clinical data, is not readily demonstrable pathologically. Scar tissue at the bases of ulcers, obliterations of the lumina of appendices and diverticula segregate portions of mucous epithelium from the neighboring mucosa and from the lumen of the alimentary canal. These portions of segregated mucous epithelium tend (*a*) to degenerate from pressure and diminished blood supply; or (*b*) to proliferate and infiltrate the surrounding tissues, thus forming cancer. [E. H. R.]

### Surgery, Gynecology and Obstetrics.

September, 1910.

1. Wood, J. C. *Gastro-Intestinal Auto-Intoxication and Mucous Entero-Colitis from the Viewpoint of Surgery.*
2. Allison, N. *Muscle-Group Isolation and Nerve Anastomosis in the Treatment of Paralyses of the Extremities.*
3. *Frazier, C. H. *The Treatment of Spasticity and Athetosis by Resection of the Posterior Roots of the Spinal Cord.*
4. Bacon, C. S. *Management of the Breast in the Puerperium and During Lactation.*
5. Stowe, H. M. *The Abdominal Wall after Delivery and the Prevention of Abdominal Insufficiency and the Neurasthenic State.*
6. *Scudder, C. L. *Congenital Stenosis of the Pylorus. A Study of the Effect of Gastro-Enterostomy upon Digestion and upon the Pyloric Tumor.*
7. Stavely, A. L. *Chronic Gastro-Mesenteric Ileus.*
8. Richardson, E. H. *Parasitic Myomata. With Report of an Unusual Case.*

3. Frazier finds that section of the posterior roots of the spinal cord in some cases gives marked relief from spasticity, but that operation must be carefully followed up by persistent after-treatment in the form of education of the muscle groups. Benefit is not immediate. Much pain may be expected until improvement finally sets in. Voluntary movement is generally restored in part, but restoration of useful function cannot always be expected.

6. Scudder, after a concise review of the pathology, symptoms and treatment of congenital pyloric stenosis in infants, reviewing the post-operative history in fourteen cases, concludes that the presence of the gastro-enterostomy stoma does not alter the metabolism of the infant to its detriment, and from x-ray pictures and one autopsy case demonstrates that the pyloric tumor probably persists even into adult life. [E. H. R.]

### The Lancet.

Aug. 27, 1910.

1. *An Address to Students.* [J. B. H.]

### British Medical Journal.

Aug. 27, 1910.

1. Bolton, C. *Remarks on Some Points in the Treatment of Gastric Ulcer.*
2. Monsarrat, V. W. *A Clinical Lecture on the Necessity for Operation in Gastro-Duodenal Ulceration.*
3. Bidwell, L. A. *Hepatic Abscess following Acute Appendicitis.*
4. Brown, H. H. *A Cause of Death after Operation for Appendicitis; the Three Lines of Defense.*
5. Faulder, T. J. *Direct Esophagoscopy.*

THE BRITISH MEDICAL ASSOCIATION.

*Section of Radiology and Medical Electricity.*

6. Davidson, J. M. *Introductory Remarks.*
7. Thomson, J. J. *Röntgen Rays in Therapeutics: A Suggestion from a Physicist.*
8. Holland, C. T. *A Screen for Examination in the Upright Position.*
9. Jellinek, G. *Electro-Pathology.*
10. *Dominici, H., and Warden, A. A. *The Technic and Results of Radium Therapy in Malignant Disease.*
11. Bailey, C. F. *A Method of Treatment by Radiant Heat and Iodine Ionization.*
12. Jones, H. L. *On the Treatment of Some Corneal Ulcers by Zinc Ions.*
13. Freund, L. *The Conditions Necessary to Obtain Radical Cures by Means of the X-Ray Treatment.*
14. *Pirie, A. H. *Hyperidrosis Cured by X-Rays.*
15. *Turner, D. F. D., and George, T. J. *Some Experiments on the Effects of X-Rays in Therapeutic Doses on the Growing Brains of Rabbits.*
16. Somerville, W. F. *The Relief of Pain and Discomfort by Means of High-Frequency Currents.*
17. *Jordan, A. C. *Types of Phthisis from the Radiographer's Point of View.*
18. *Orton, G. H. *Some Points in the X-Ray Diagnosis of Pulmonary Tuberculosis.*
19. Rowden, L. A. *The Value of Screen Examinations in the Diagnosis of Renal Calculus.*
20. Lazarus-Barlow, W. S. *Radiation and Biological Processes, with Some Reference to the Skalographic Action of Animal Tissues.*
21. Simmons, G. A. *The Constitution and Organization of an X-Ray Department of a General Hospital.*
22. *Barclay, A. G. *The Normal and Pathological Stomach as Seen by the X-Rays.*
23. Morton, R. *Some Bony Changes Observed in a Case of Chronic X-Ray Dermatitis.*
24. Simpson, J. B. *The Advantages of X-Rays in Country Practice.*
25. Wenckebach, K. F. *A New Stand for X-Ray Work.*

10. Dominici describes remarkable results obtained by means of radium therapy in some cases of malignant disease, including lymphoma of the parotid, sarcoma of upper jaw, sarcoma of the neck, epithelioma of the nose and others. The article is illustrated by means of an excellent plate.

14. Pirie describes a peculiar form of excessive sweating which he calls "hyperidrosis frigida," characterized by its increase by cold and its entire cessation at night. Such cases which he presents suffering from this condition have been entirely relieved by x-rays.

15. Turner and George present preliminary results of work done on the effect of x-rays in therapeutic doses on the growing brains of rabbits. They demonstrate certain gross changes, but come to no definite conclusions. They advise further work on the subject.

17. Jordan makes the remarkable statement that "the Röntgen-ray method is an indispensable diagnostic aid in all pulmonary diseases and that it is capable of demonstrating the exact position and extent of the pulmonary lesion even in very early cases of phthisis." He goes on to state, however, that the healed lesion may make a shadow similar to that of the earlier active lesion. These two statements do not seem to agree.

18. Orton regards the x-ray as an aid to diagnosis in early tuberculosis, but by no means the most important factor. He discusses various points in the early diagnosis of this condition by means of the x-rays.

22. Barclay discusses the stomach in normal and pathological conditions as seen by the x-rays, with special reference to the diagnosis of pyloric obstruction, ulcer and cancer. He believes that the x-ray examination by means

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of the bismuth meal will give much information in experienced hands, but that the method is a difficult one.

[J. B. H.]

Deutsche Medizinische Wochenschrift. No. 35.

Sept. 1, 1910.

1. Graser. *The Treatment of Tetanus.*
2. *Munk, F. *The Diagnostic Importance of Microscopically Visible Lipoids in Urine and Sputum.*
3. Brüning, A. *Treatment of Tuberculosis with Trypsin.*
4. Bofinger, O., and Dieterlen. *Essay on the Knowledge of the Cause of Meat Poisoning.*
5. *Tsuzuki, M. *The Influence of Calcium Iodide and Arsenious Acid on Typhoid Bacilli during Typhoid Convalescence.*
6. Fejes, L. *Bacillus Coli Communis as a Cause of Sickness and as a Saprophyte in Man.*
7. Löwenberg, M. *The Serum Diagnosis of Syphilis by Means of the Porges Reaction.*
8. Gierlich, N., and Hirsch, M. *Tubercle at the Root of the Brain found at Autopsy.*
9. Kausch. *Operative Treatment of Diastasis of the Recti Muscles.*
10. Biesalski. *Tendon Transplantation.*
11. Clemm. *Observations on the Specific Action of Pyramidon.*
12. Schall, M. *Recent Technical Improvements in the Field of Medicine.*

2. Munk describes a substance which resembles fat but which can be separated from it by the polarization microscope. This substance called "lipoid" occurs normally only in the suprarenals. Under certain conditions of disease it appears in other organs and vessels. This author has found it in the urine and sputum of patients and thinks that the examination of a urinary sediment with the polarization microscope for lipoid is of diagnostic value in making a differential diagnosis between acute and chronic nephritis.

5. Tsuzuki found that patients recovering from typhoid fever became free from the bacilli in their stools and urine more rapidly if they had administered to them calcium iodide or arsenious acid. These drugs seem to act much more actively *in vivo* than *in vitro*. This is rather in the form of a preliminary publication, but if verified by others it ought to prove of value in the attempt to eradicate bacillus carriers. [C. F., Jr.]

Berliner Klinische Wochenschrift. No. 32.

Aug. 8, 1910.

1. Neisser, A., and Kuznitzky, E. *The Value of Ehrlich's Arsenobenzol in the Treatment of Syphilis.*
2. Friedberger, E. *The Relation between Hypersensitiveness and Immunity.*
3. Much, H. *The Use of Serums in Psychiatry.*
4. Allard, E. *Pseudopulmonic Sounds and Their Avoidance in the Auscultation of the Apices.*
5. Hofbauer, L. *The Question of Emphysema.* (Part II.)
6. Halberstaetter, L. *Does the Exciting Cause in Trachoma arise through a Change in the Gonococcus?*
7. Stabilini, C. *Contribution to the Subject of the Meiostagmin Reaction in Malignant Tumors.*
8. Satta, G., and Fariani, G. M. *The Influence of Lipoids in Liver Autolysis.*
9. Meyer, G. *Nursing in Health and Sickness, Social Medicine and Medical Statistics.*
10. Leiske, H. *Misuse of Medical Titles.*
11. Meyer, H. *A New and Simpler Laryngeal Mirror.*

No. 36. Sept. 5, 1910.

1. *Hadda, S. *Two Cases of Punctured Wounds of the Larger Blood Vessels.*
2. Wolff-Eisner, A. *The Relation between the Action of Tuberculin and the Tuberculin Treatment.*
3. Lange, C. *Wassermann's Reaction, Particularly in Relation to the Treatment of Syphilitics with "Ehrlich's 606."*
4. Finkelstein, J. A., and Dawydow, W. J. *Studies with the Wassermann Reaction in the Laboratory and the Clinic.*
5. Friedländer, W., and Reiter, H. *The Vaccine Treatment in the Complications of Gonorrhea.*
6. Grabow. *Concerning a Case of Extensive Sarcoma of the Pleura with Calcification following Primary Sarcoma of the Tibia.* (Continued.)
7. Evler. *Early Diagnosis and the Serum Treatment of Tetanus.* (Continued.)
8. Runge, E. *The Question of Cæsarean Section.*

1. After relating the progress that has been made in the surgery of blood vessels, the author presents two cases. The first was a punctured wound of the left femoral artery in the region of Hunter's canal. This wound was repaired with silk sutures, and complete recovery followed. The second case is mentioned to show that even the largest veins may be penetrated without immediate fatal hemorrhage, for the superior vena cava was penetrated. This was not diagnosed until after death, which followed some sixteen hours after his injury. [J. L. H.]

## Correspondence.

### WINCHESTER AND THE ARTHURIAN REGION. SALISBURY. STONEHENGE. GLOUCESTER. BATH.

[*From Our Foreign Correspondent.*]

Gloucester, Sept. 12, 1910.

*Mr. Editor:* Our past ten days of travel have taken us through the regions particularly associated with Arthurian romance, and it has been pleasant in connection with them to recall the half-mythical, half-historic legends of the British king and his knights which have formed the material of our greatest racial and national epic.

From Southampton one may go up the River Itchen, memorable for its later piscatorial association with Sir Izaak Walton, to Winchester, supposed to be the "many-tower'd Camelot" of Arthur. There is little in the busy town of to-day, however, to recall the "blameless king" and his vanished state. Indeed, modern Winchester has much more obvious reminiscences of another monarch, Alfred the Great, who made it the capital of his kingdom of Wessex, and issued thence his four famous Anglo-Saxon translations. His heroic statue, erected at the millennium of his death, dominates the market-place and principal street, and sends westward over land and sea the benediction of his uplifted sword-hilt. Even after his time, during the ascendency of the Mercian kings, the city retained much of its political importance and was a headquarters for William the Conqueror and his Norman successors until the seat of government was finally transferred to "the place which now is this world's hugest." Of all this royal magnificence there is now scarcely any trace, and castle and palace have been outlasted by the grim, massive cathedral, where, among others of note, the good Sir Izaak lies buried, and by the famous Winchester School, founded by Bishop William of Wykeham, whose motto, "Maners makyth Man," deserves to rank with the more practical apophthegm of another ecclesiastic of his time, "Serve God and be Chearefull." Both might be pondered and applied to advantage in our own day. Few men have succeeded as well as Wykeham in impressing their own personality on institutions which they have shaped, and to this day the graduates of the Winchester School and of its scion, New College, Oxford, form throughout England a clan of Wykehamites whose loyalty to each other and allegiance to their school and the principles of its founder are remarkable. A visit to the pleasant, venerable buildings of this ancient school is well rewarded, not only by the interest of observing its preservation of old usages and customs, such as the serving of food on wooden trenchers, but by the inspiration of the noble inscriptions under its portals to the memory of alumni who have sacrificed life or fortune in the honorable service of their country.

Among so much of medieval interest there is small wonder that everything but the memory of Arthur has perished out of Winchester, and one must have recourse to imagination to restore the Camelot of old. In this

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instance the trick is not so difficult, and for once the fancy cheats "as well as she is famed to do." Close by the river stand still the ruins of Wolvesey Palace, a Norman structure of the twelfth century, and if one walk out of the town and down the stream at sunset, when the light blurs the outlines and glorifies the semblance of everything it touches, one can transform their fragments at will into the stately towers and gates of King Arthur's fabled castle. As we went one afternoon on such an excursion, we met, in the person of a small urchin, an enthusiastic modern disciple of the "compleat angler" who later gave new fame to these waters. Stopping by the bank to inquire of his success, we asked him what he was fishing for; to which he solemnly replied, "Trite," a plural which was novel but might perhaps be justified on the analogy of "kine" and "mice." As we came back, after this episode, the mist-wreaths were already rising from the river and twining among the reeds along the shore, and in the evening twilight it was not hard to see once more the lovely Lady of Shalott drifting down out of the dusk on her barge to the jasper gates of Camelot.

Not many miles from Winchester is Salisbury, a rather prim and quiet town with a beautiful "mercat-cross," in the shape of a stone crown, like that of Chichester, and an elegant cathedral that suns itself in a broad, open green, surrounded but not hidden by noble elms and beeches. In this cathedral, near the chancel-rail, is buried

> "The subject of all verse,
> Sidney's sister, Pembroke's mother,"

the Countess of Pembroke, for whom the "Arcadia" was written by her gallant and chivalrous brother, Sir Philip Sidney, the knight-errant of English poets. By a curious coincidence, we learned that a Boston physician had been married in this church five years ago, and found the record, with his name, on the register. After all, personal associations, whether past or present, are the strongest links that draw us to old places as well as to old friends.

Even more interesting than Salisbury, because unique in kind, is Stonehenge, the most impressive and ancient human monument in England. One visits it from Amesbury, a quiet, sunny little village, preserving, in slightly altered form, the name of Almesbury Abbey, whither the guilty Queen Guinevere fled after the discovery of her treason with Launcelot, and where, after Arthur's last battle, she "let make herself a nun." Of the old nunnery no trace remains, but the present small abbey church doubtless stands upon its site, and seems to harbor some measure of the peace to which she passed.

Stonehenge itself is about two miles from Amesbury, standing solitary and inexplicable in the open rolling country of Salisbury Plains. As you first catch sight of it from a distance, it looks almost insignificant; but as you approach, it acquires dignity; and when you stand close to its enormous shafts, you begin to appreciate its archaic grandeur. Dozens of theories have been propounded by antiquarians and geologists to account for its existence. The probability seems to be that at least some of the gigantic monoliths of which it is built were brought by glaciers during the Ice Age from Iceland, and subsequently left on the alluvial plains of southern England. Here they were found by the Phenicians at the time when this ancient race, near the dawn of history, apparently roamed and settled sporadically over a large part of Europe. With them the Phenicians constructed Stonehenge as a temple of sun worship, in the form of two concentric circles enclosing two ellipses. At the westerly focus of the inner ellipse was an altar, upon which, on the longest day of the year, the rising sun casts the shadow of a single stone, now called the Friar's Heel, set up some distance to the eastward. Midway between this stone and the outer circle of the temple is a large, flat slab on which the victims are supposed to have been slaughtered and their viscera then carried up in processional to be burned on the altar. It is a striking coincidence that the date assigned to this structure by archeologists on the basis of stone implements and utensils dug up in the vicinity, and that computed by astronomers from the present slight deviation of the shadow, owing to slow cyclic change in the position of the solstices, is the same, — 1700 B.C.

The Phenicians passed away; the Celts came, whom we think of and know as the native, aboriginal Britons. The Druids, the priests of their national religion, found Stonehenge ready to hand, and, knowing nothing of its astronomic significance, used it as a temple for their own form of worship. Their victims were probably killed on the same slaughter-stone, but, instead of being burned, were buried in the peculiar tumuli or barrows which still remain in the meadows round about. Then came the Romans, drove the Britons to the fastnesses of Scotland, Wales, Cornwall, and Brittany, built up a civilization of their own and were in turn displaced by the invading hordes of Jutes, Angles, Saxons and Danes. And still Stonehenge remained a puzzle and marvel to successive races, remained through the Norman conquest and the vicissitudes out of which has developed the England of to-day. Many of the monoliths have fallen, but the original plan is perfectly distinct. When one contemplates this colossal monument, which in its utter simplicity of construction has persisted through the storm and stress of thirty-six centuries, the remote antiquity of Arthurian legend seems recent in comparison, and if one reflects that these stones of which it is built were probably brought two hundred thousand years ago by glaciers from the strata in which they were formed in æons past, one begins to realize how small a moment the whole of human history is in the space of measurable time. Such a contrast reduces the greatest individual achievement to nothing, and makes Stonehenge the peer of the Sphinx and the Pyramids and the image of Ozymandias.

From Stonehenge it was a long journey, and a much longer lapse in thought, to Camelford, the little hilly town in Cornwall near which is reputed to have been fought Arthur's "last, great battle in the West." Of course, there is nothing now but tradition to tell the tale, and we had not even time to seek out Dozmare Pool, locally regarded as the "murmuring mere" into which Sir Bedivere cast the brand Excalibur. For us Camelford was only a stopping-place from which to continue our way by coach to Tintagel.

Tintagel, with which Tennyson has familiarized us as "dark Dundagil by the Cornish Sea," remains not only one of the most romantically beautiful spots in England, but one of the most tangible memorials of a shadowy and legendary past. On a huge, rugged promontory thrust out into the roaring ocean from a shore of dark, bristling, slaty reefs, stand the ruins of a castle of unknown date, which, though doubtless not the original structure, probably occupies the site of the ancient castle of the kings of Cornwall. The ceaseless action of storm and waves has battered down the ramparts and carried a large part of the once extensive fortress into the sea; but the round keep on the shoreward side still commands the dark, narrow ravine that leads down to it from the land. The castle should seem impregnable, and is said to have been entered never by force and only once by fraud, when Uther Pendragon made his way in by representing himself as Gorlois, the King of Cornwall, whom he had just slain in battle. In this castle was born Arthur, the child of Uther and of Igraine, the Cornish queen, and from here he is fabled to have been taken at night by Merlin, who entrusted him secretly to Sir Ector to be nurtured and educated until it should be time for him to claim his kingdom. At the base of the cliff on which the castle stands is a wicked cave, tunnelling completely through the promontory, slippery with seaweed and dripping with ooze at low tide, and at high tide filled with thundering surf and dashing boulders; and this is still known as Merlin's Cave, for here the great wizard lurked till he could obtain the child. That romantic episodes should have occurred in such an environment seems inevitable, and from the prosaic certainties of to-day it is fascinating to speculate back into the haze of a bygone age and conjecture what may have been the basis of actual fact underlying so much that is beautiful in song and story.

In later time, after King Arthur had come to his own and had established the Round Table, Tintagel Castle remained the seat of the kings of Cornwall, and became the scene of the more tragic romance of Iseult, the wife of King Mark, and Tristram of Lyonesse. That story, unfortunately more familiar to most of us in the foreign garb of the opera "Tristan und Isolde," is still one of the most perfect types in literature, and its association with Tintagel makes the old castle doubly interesting. As one stands on

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the headland looking across towards the Irish shore, one can see in any passing boat the silken-sailed vessel bearing Tristram and Iseult, upon whom the sea has worked its immemorial magic.

From Tintagel our road lay along the coast, through Cornish and Devon villages of the greatest charm and beauty, but without particular interest of association. At Taunton, the county-town of Somersetshire, we came, singularly enough, upon two totally diverse objects of professional interest. In the local museum here is preserved the trunk of a young ash tree cleft for the cure of congenital hernia. There appears to have been a rather widely diffused superstition in England that if a child with a hernia be passed thrice through a sapling thus cleft, and if the tree subsequently grow together again, the child will be healed of his infirmity. In this instance, the cure must have failed, or else some enterprising folk-lore student secured the specimen too early and aborted the result, for the split in the trunk still remains widely enough separated to admit the passage of a full-term baby through it with ease. We were credibly informed that this practise has been followed in all good faith by inhabitants of the vicinity until within very recent years. It is quite conceivable that the percentage of spontaneous cures of infantile umbilical hernise, and of hydrocele incurring the still customary parental diagnosis of hernia, was sufficiently great to establish and maintain the reputation of this procedure, which, like other primitive therapeutic measures, apparently had its origin in the idea of transferring the ailment in similar form to some creature or thing, in which it might become cured by natural process. Our other object of professional interest at Taunton was a sign-board on the highway advertising the "Harvard Teeth Institute." Apparently the merits of American dentistry and of at least one American school are not unknown in Somerset, or their possible commercial value unappreciated.

A forenoon's journey from Taunton took us once more out of the mercantile atmosphere of a busy market-town back to the dreamland of medieval romance, to Glastonbury, the Avalon of Arthurian tradition. Geologic and climatic change, as well as the growth of so-called civilization, have altered it somewhat from

"The island vale of Avalon,
Where falls not hail, or rain, or any snow,
Nor ever wind blows loudly";

yet it is still as lovely a spot as is to be found in all of merry England, and lies

"Deep-meadow'd, happy, fair with orchard-lawns,
And bowery hollows, crown'd with summer seas."

It was always hard to understand how Glastonbury could ever have been an island, but the solution becomes easy at a glance when one ascends the Tor and looks down on the great alluvial plain that encircles the four hills, — Tor, Chalice, Edmund's and Wearyall, — between which lies the little town. In Arthur's time this plain was all under water, and Avalon with its hills formed a sheltered "island-vale," to which the king was brought "to heal him of his grievous wound." To this island also was reputed to have come some centuries earlier Joseph of Arimathea, bringing with him as a supremely precious sacred relic the Holy Grail. His descendants were supposed to have built on Chalice Hill the Grail Castle and to have dwelt there as guardians of the Grail and kings of the surrounding country, until the holy vessel was lost through the misdemeanor of King Pelles, about the time when Arthur came to his kingdom. Hence the quest of the Grail became one of the favorite exploits essayed by knights of the Round Table; and hence, after his last battle, Arthur was appropriately taken to Avalon. Of his reputed grave there, and of Queen Guinevere, and of the mythical castle, there is, of course, no trace to be found. In later days, when the waters had receded, and Glastonbury had ceased to be an island, a monastery was established there, which in time grew into the most splendid mitered abbey of England. Here St. Dunstan lived and vanquished the devil in summary fashion, and hither came pilgrims "from every shires ende" to visit the famous shrine. Wearyall Hill still preserves the memory of their hardships, when from its summit they first caught sight of their goal and began the last stage of the journey. Yet apparently the creature comforts of wayfarers were not wholly neglected even in those days, for we lodged in the town at the "Pilgrimes Inn," built in 1425 for the accommodation of palmers coming to the shrine, and if they were as well housed and fed there as we, their lot could not have been a very hard one.

Of the vast church and accessory buildings of Glastonbury Abbey, only a few fragments are still preserved, but they are enough to give a conception of its former lofty magnificence and beauty. Unfortunately, human progress seems inevitably to involve the sacrifice, not only of human lives, but of many of the finest fruits of precedent human genius. Henry the Eighth, that uxorious and iconoclastic monarch, to whom the world owes so much, yet who ruthlessly destroyed so many of its noblest monuments, suppressed the abbey during his wholesale measures in the sixteenth century, and hanged its last abbot on Glastonbury Tor, saying that he would make a scarecrow of him to frighten his fellow-prelates. After this, the days of the abbey were numbered, and the unthinking and unfeeling generations completed the work of plunder by pillaging the ruined walls of rare tracery and exquisite carving to be used for macadamizing the roads of the neighborhood.

After so distinguished a history and so calamitous a visitation, Glastonbury and its abbey remain, however, rich in stirring memories and associations. Whether Arthur were really ever buried here or not, his spirit has become the *genius loci*, as that of Friedrich Barbarossa has of the Hartz Mountains. And if ever one should wish to appreciate the significance of Arthurian romance, or look for the return of Arthur and his time to this earth, it could be in no other spot than in this isle of Avalon.

It is singular that the translation and apotheosis of Arthur should have occurred so near the site of one of the earliest and perhaps the most authentically historic of the episodes in his career. Less than thirty miles from Glastonbury, rising greenly wooded behind the city of Bath, is Bath Mountain, where was fought the celebrated battle of Mons Badonis, mentioned by Nennius as the last of a series of engagements which marked the victory of British resistance to Roman rule and ended in the establishment of King Arthur upon his throne of sovereignty among a number of petty British chieftains. The modern city of Bath, however, has many more reminiscences of the Georgian than of the Arthurian era, and the spirit of Beau Nash still pervades its abbey and its pump-room, despite the Roman excavations that reveal the luxury of earlier conquerors. The waters still bubble up hot and copious as they were doing fifteen centuries ago, at the rate of half a million gallons a day; and, whether their efficacy be due to chalybeate virtue or to a radio-activity unsuspected in the days of the Cæsars, their healing properties are still eagerly sought by those who are not sick enough to be abed nor poor enough to be obliged to work for a living. Doubtless, as the Pindaric quotation over the door of the pump-room says, "Water is best," but one need hardly come to Bath to learn that truism.

One other place of Arthurian association deserves mention in the chronicle of our journey, and that is "old Caerleon upon Usk." Here once was Arthur's summer palace, and here still is preserved the local memory of his presence. Caerleon to-day is a sleepy little hamlet, dozing in the leafy valley of the Usk that rivals the more celebrated Wye in beauty. It has but a few hundred inhabitants, and contains a single, diminutive inn, with sanded floors and deal tables and walls adorned with scripture texts and the warning that "swearing is strictly prohibited." There seems much doubt whether the circumvallated mound, still pointed out in a meadow as King Arthur's castle, were ever a castle or had anything to do with Arthur. Be that as it may, the name is still there to conjure with, and in romance a name is everything. Caerleon upon Usk is a phrase to recall all the buoyancy of boyhood, and the sunny beginning of adventures "once upon a time." If ever there were an enchanted palace, it should be here, and there is no better place than here to take farewell of King Arthur, the secret of whose immortality is that he embodies as an ideal the eternal youth and hope of man.

Medicus Peregrinus.

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## RECORD OF MORTALITY

For the Week ending Saturday, Sept. 24, 1910.

| Cities. | Reported deaths in each. | Deaths under five years. | Cities. | Reported deaths in each. | Deaths under five years. |
|---|---|---|---|---|---|
| New York | 1,225 | 476 | Waltham | 6 | 4 |
| Chicago | — | — | Pittsfield | 18 | 5 |
| Philadelphia | — | — | Brookline | 3 | 1 |
| St. Louis | — | — | Gloucester | — | — |
| Baltimore | — | — | North Adams | 5 | 2 |
| Cleveland | — | — | Northampton | 12 | 1 |
| Buffalo | — | — | Chicopee | 6 | 4 |
| Pittsburg | — | — | Medford | 7 | — |
| Cincinnati | — | — | Beverly | 3 | 1 |
| Milwaukee | — | — | Leominster | 4 | — |
| Washington | — | — | Hyde Park | 6 | 3 |
| Providence | — | — | Melrose | 7 | 1 |
| Boston | 227 | 101 | Newburyport | 6 | 1 |
| Worcester | 44 | 15 | Revere | 4 | 2 |
| Fall River | 41 | 19 | Westfield | 4 | 1 |
| Cambridge | 31 | 8 | Woburn | 7 | 0 |
| Lowell | 54 | 19 | Peabody | — | — |
| New Bedford | 43 | 21 | Marlboro | 3 | 0 |
| Lynn | 23 | 5 | Attleboro | 5 | 2 |
| Springfield | 21 | 7 | Adams | 5 | 2 |
| Lawrence | 38 | 17 | Clinton | 3 | 1 |
| Somerville | 13 | 4 | Gardner | 4 | 0 |
| Brockton | 9 | 3 | Milford | — | — |
| Holyoke | — | — | Watertown | 4 | 1 |
| Malden | 10 | — | Plymouth | — | — |
| Chelsea | 5 | 1 | Southbridge | 3 | 1 |
| Newton | 3 | 1 | Weymouth | 2 | — |
| Salem | 15 | 5 | Framingham | 3 | 1 |
| Haverhill | 17 | 5 | Wakefield | — | — |
| Fitchburg | 11 | 3 | Webster | 4 | 4 |
| Everett | 3 | 1 | Arlington | 2 | 1 |
| Quincy | — | — | Greenfield | 1 | — |
| Taunton | 19 | 8 | | | |

## LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND OTHER OFFICERS OF THE PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDED SEPT. 21, 1910.

Gassaway, James M., surgeon. Granted one month's leave of absence from Sept. 7, 1910, on account of sickness.

White, J. H., surgeon. Granted ten days' leave of absence from Sept. 17, 1910.

Williams, L. L., surgeon. Granted seven days' leave of absence from Sept. 19, 1910, under paragraph 189, Service Regulations.

McIntosh, W. P., surgeon. Granted seven days' leave of absence from Sept. 23, 1910.

Parker, H. B., passed assistant surgeon. Granted three days' leave of absence from Aug. 25, 1910, on account of sickness.

Anderson, John F., passed assistant surgeon. Directed to proceed to Ellis Island, N. Y., upon special temporary duty. Sept. 16, 1910.

Goldberger, Joseph, passed assistant surgeon. Granted one month's leave of absence from Sept. 26, 1910.

Schereschewsky, J. W., passed assistant surgeon. Directed to report at Bureau upon special temporary duty. Sept. 16, 1010.

Francis, Edward, passed assistant surgeon. Directed to proceed to Philadelphia, Pa., New York, N. Y., and Detroit, Mich., upon special temporary duty. Sept. 14, 1910.

McCoy, George W., passed assistant surgeon. Directed to proceed to Berkeley, Cal., upon special temporary duty. Sept. 14, 1910.

Warren, B. S., passed assistant surgeon. Detail to represent the service at the meeting of the state health officers, to be held in Waterloo, Ia., Sept. 20, 1910. Sept. 15, 1910.

Rucker, William C., passed assistant surgeon. Leave of absence for one year without pay from June 4, 1910, amended to read from June 4 to September 14, 1910, without pay. Granted ten days' leave of absence from Sept. 14, 1910.

Stanton, J. G., acting assistant surgeon. Granted twenty-six days' leave of absence from Sept. 21, 1910.

Curley, C. P., acting assistant surgeon. Granted twenty-one days' leave of absence from Sept. 22, 1910.

Maguire, E. S., pharmacist. Leave of absence for thirty days from Aug. 6, 1910, amended to read twenty days from Aug. 6, 1910.

Beck, J. E., pharmacist. Granted thirty days' leave of absence from Sept. 15, 1910.

Bell, J. M., pharmacist. Relieved from duty at Chicago, Ill., and directed to proceed to Savannah (Quarantine), Ga., and report to the medical officer in command for duty and assignment to quarters. Sept. 16, 1910.

Stump, F. A., pharmacist. Directed to proceed to Honolulu, Hawaii, and report to the chief quarantine officer for duty. Sept. 12, 1910.

### PROMOTION.

Ott, C. R., pharmacist. Promoted to pharmacist of the second class, to date from Aug. 29, 1910.

### BOARDS CONVENED.

Board of medical officers convened to meet at the Marine Hospital, San Francisco, Cal., Sept. 26, 1910, for the examination of Assistant Surgeon Friench Simpson, to determine his fitness for promotion to the grade of passed assistant surgeon. Detail for the board: Surgeon Rupert Blue, chairman; Passed Assistant Surgeon F. E. Trotter; Passed Assistant Surgeon R. E. Ebersole, recorder. Sept. 14, 1910.

Board of medical officers convened to meet at the Marine Hospital, Stapleton, N. Y., Sept. 26, 1910, for the examination of Assistant Surgeon R. A. Herring, to determine his fitness for promotion to the grade of passed assistant surgeon. Detail for the board: Surgeon Hiram W. Austin, chairman; Passed Assistant Surgeon W. A. Korn; Passed Assistant Surgeon George L. Collins, recorder. Sept. 14, 1910.

Board of medical officers convened to meet at Philadelphia, Pa., Sept. 21, 1910, for the purpose of determining the physical condition of Surgeon Eugene Wasdin. Detail for the board: Surgeon Hiram W. Austin, chairman; Surgeon W. G. Stimpson, recorder. Sept. 15, 1910.

## A CORRECTION.

In our issue of Sept. 29 the note entitled "The Cost of Progress" should have been credited to the *British Medical Journal*.

## RECENT DEATHS.

Collins, Orville Williams, M.D., M.M.S.S., died in South Framingham, Sept. 5, 1910, aged fifty-seven years.

Dr. William Cowpe Gardner, of New York, died on Sept. 29, from cardiac disease. He was born in Liverpool, England, in 1855, and was graduated from the Long Island College Hospital, Brooklyn, in 1892.

Dr. John Erhard, of College Point, Borough of Queens, New York City, died on Sept. 28, at the age of forty-eight years. He was graduated from the Long Island College Hospital in 1896.

Dr. Hubert B. Gudger, of Asheville, N. C., died in New York City on Oct. 2, at the age of twenty-six. He graduated from the University of Pennsylvania Medical School in June, 1910.

Dr. Charles Edwin Miles, who died last week in Roxbury, was born at Stow, Mass., on Dec. 31, 1830. He graduated from Worcester Medical College in 1859, and since that time had practised medicine in Roxbury. He was at one time chairman of the Massachusetts State Board of Registration in Medicine. He is survived by his widow.

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*Mohler, John R.: Bulletin 56, Hygienic Laboratory, United States Public Health and Marine-Hospital Service, p. 506.
Lumsden, L. L.: Bulletin 56, Hygienic Laboratory, United States Public Health and Marine-Hospital Service, pp. 163, 164.
Rosenau, M. J.: Bulletin 56, Hygienic Laboratory, United States Public Health and Marine-Hospital Service, pp. 641, 646, 647, 648, 664, 677, 678.
Schereschewsky, J. W.: Bulletin 56, Hygienic Laboratory, United States Public Health and Marine-Hospital Service, p. 727.
Freeman, Rowland G.: Jour. Am. Med. Asso., vol. liv, 1910, pp. 372, 373.
Park, W. H., and Holt, L. Emmett: Med. News, vol. lxxxiii, 1903, p. 1066.
Sedgwick, W. T.: Jour. Mass. Boards of Health, vol. xiv, February, 1904, p. 41.
Smith, Theobald: Am. Jour. Pub. Hyg., vol. xvii, May, 1907, p. 200.

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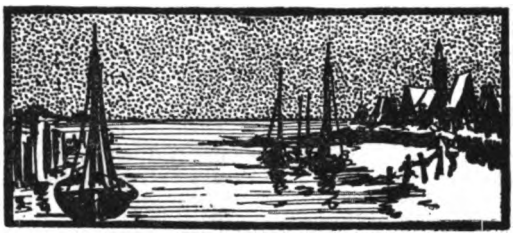

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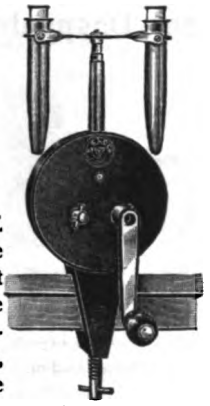

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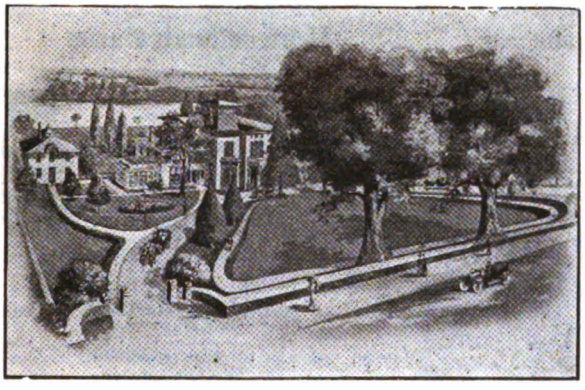

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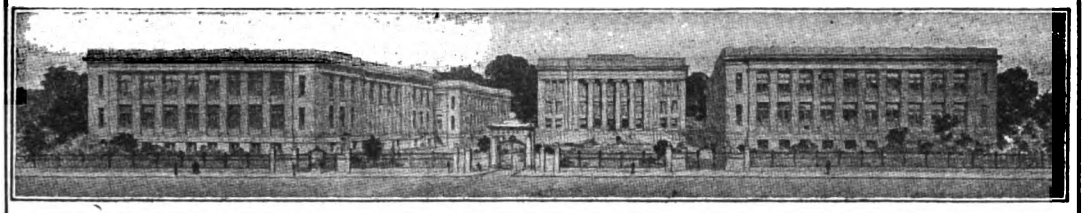

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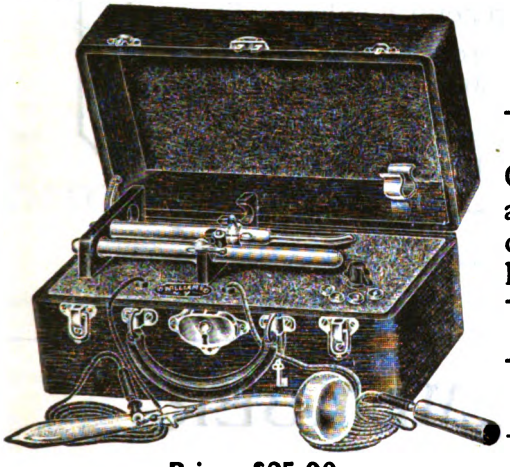

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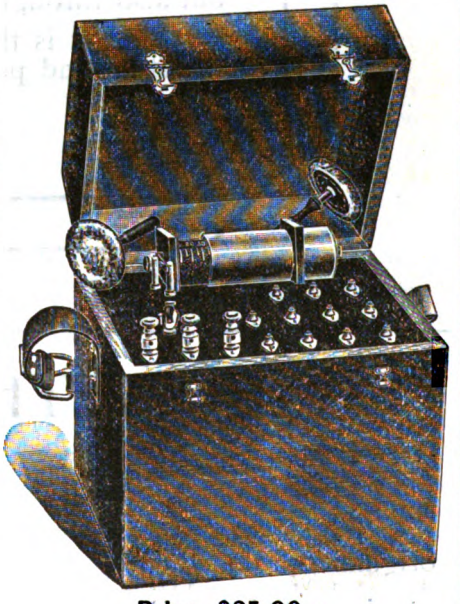

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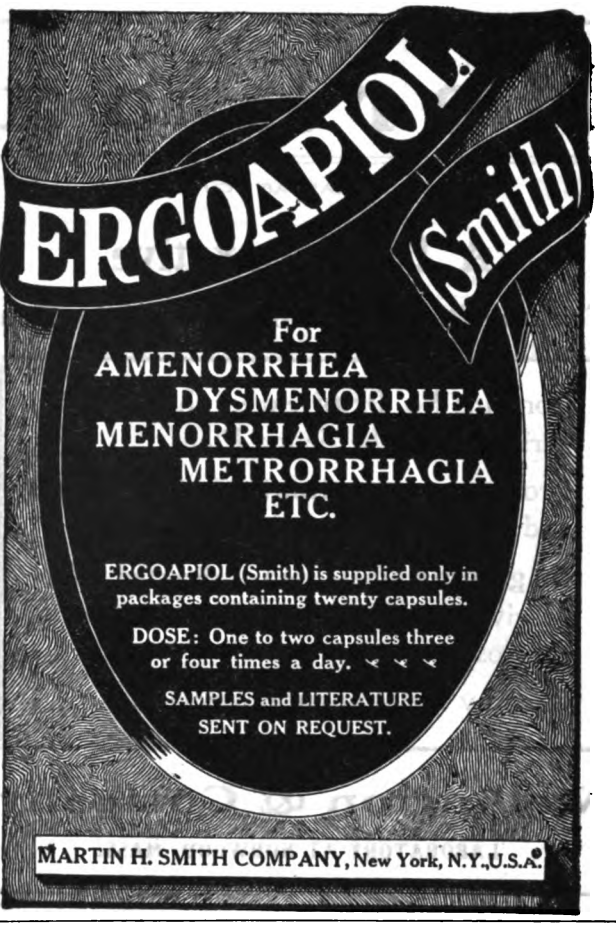


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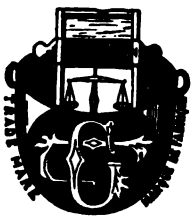

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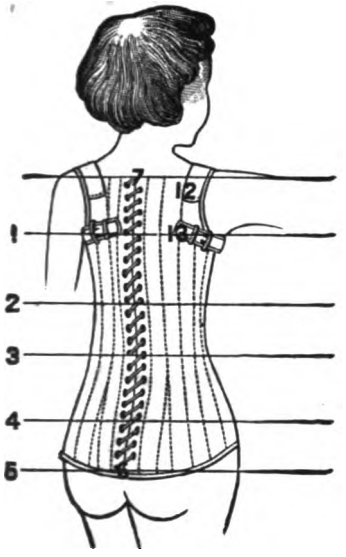


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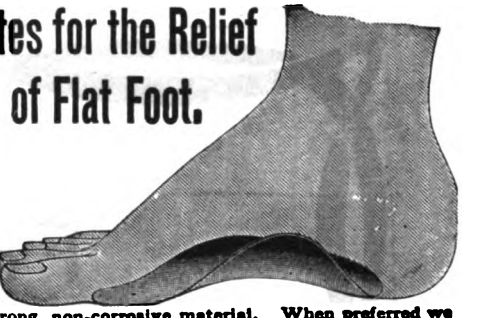

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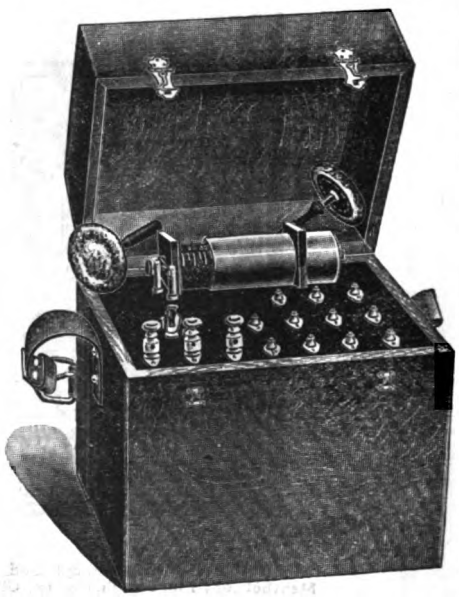

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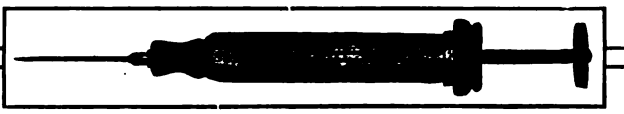

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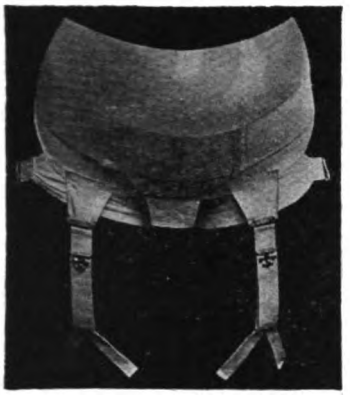

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## Original Articles.

# ACUTE THORACIC EMPYEMA. AVOIDANCE OF CHRONIC EMPYEMA. RIB TREPHINING FOR SUCTION DRAINAGE.*

BY SAMUEL ROBINSON, M.D.,

*Surgeon to Out-Patients, Massachusetts General Hospital; Visiting Surgeon to the Harvard Clinic.*

Death of patients as a penalty for neglect of diagnosis and treatment of inflammations within the abdomen has finally persuaded us to recognize such conditions early. Surgeons, realizing the danger to life, operate promptly to remove infection, or with close observation seek to limit the spread of the disease. Suppurative infections of the thorax are regarded with less respect, and are looked upon with reason as less threatening to life; hence the lax enthusiasm to recognize promptly thoracic infections, and a tardiness approaching indifference on the part of the surgeon in securing drainage. In other words, in suppurating conditions of the lung and pleura, as in other lesions of the body, the effort made is in direct proportion to the fear of losing the patient. A not uncommon remark is the following: "I have never lost a case of empyema."

The object of this paper is to emphasize the fact that while nature strenuously combats pleural infections in spite of our incomplete efforts, accuracy of diagnosis, prompt surgery and diligent after-treatment of such conditions are absolutely necessary not only to save the patient, but to shorten the convalescence, to prevent amyloid disease of other organs and to restore the normal function of the lung and pleura. Complete recovery and not the mere saving of life should be, from the outset, the main object in the treatment of thoracic suppuration. It cannot be denied that abscess of the periphery of the lung, if early recognized and operated upon, might avoid a local empyema. Local empyema detected with like promptness will often prevent the occurrence of a general pleural infection, and, furthermore, chronic empyema is a condition which should never exist, and which is in each and every case attributable to neglect either in the recognition of infection at its early stages, in its operative treatment or in its post-operative management. A large percentage of the cases of purulent pleurisy which result after operation in so-called chronic empyema, namely, in the existence of a large thick-walled cavity, with many ounces of residual pus contents, are due to the negligence of the internist. A smaller group of cases of chronic empyema may be credited to the neglect of the surgeon to provide for the re-expansion of the lung after complete or incomplete drainage; and while the main discussion of this paper will deal with the prevention of chronic empyema by methods of thorough drainage and efforts at re-expansion, it should be noted by the internist that such re-expansion is frequently impossible when he has allowed a purulent pleurisy to remain unrecognized or neglected until the lung is so adherent in its retracted, compressed condition that expansion is impossible without a grave radical procedure, even though the expansibility of the lung tissue may yet persist.

Through the courtesy of the Visiting Staff of the Massachusetts General Hospital, I have had the opportunity to operate upon fifty-one patients with intrathoracic diseases, of which thirty-four cases were empyema. The views expressed in this paper are based essentially upon experiences with these cases, although a detailed account is omitted.

### DIAGNOSIS.

I hesitate to discuss the diagnosis and differential diagnosis of a condition so well-known as purulent pleurisy, but my attention has been called to the difficulty which attends the diagnosis and localization in certain cases. Earlier diagnosis would be favored if we were as keenly on the lookout for suppuration in the thorax as we are in the abdomen. No case of pneumonia should be regarded as properly treated when in the process of resolution one is not constantly watching the temperature, physical signs and leucocytosis for the possible accumulation of serous or purulent fluid. There is no doubt that empyema is more often diagnosed as resolving pneumonia than that the signs of the resolving lobe are mistaken for pus. To doubt the ability of the average doctor to detect fluid in the thorax would be an attack upon the fundamentals of his training, and it is more reasonable to doubt his persistence in searching for a focus to explain a rise in temperature, an increased leucocytosis, a chill or night sweat, vomiting, abdominal pain or other latent symptoms in the convalescence following the crisis of pneumonia. Though convinced that pus is present in the chest, we are often guilty of lack of diligence in its pursuit. Flatness in place of dullness, absence of râles, an absent or much diminished respiratory note, should aid in differentiating a pyothorax from an area of consolidation. Localized tenderness to pressure on the thoracic wall (Musser) may aid in diagnosis, but whether certain or in doubt as to the presence of pus, exploratory thoracentesis should be done in every case, not only to convince the internist of its presence, but to guide the operator in his thoracotomy. Such diagnostic punctures are, to be sure, frequently negative, even after repeated effort. Granted sufficient persistence, I have never known this method to fail in positive cases except when the pus was between the diaphragm and the under surface of the lower lobe, or encapsulated between the pleural surfaces of an interlobar fissure.

Needle diagnosis is often neglected for one of two reasons. There may be no suitable needle within easy access, or it is in no condition for use. Some practitioners hesitate to employ a needle puncture, either doubting their ability or dreading to suggest a semi-operative procedure to the septic patient and discouraged relatives. No surgical procedure impresses me as more brutal that the *stabbing* method of thoracentesis. Even with a

* Rib-trephining was suggested to me by Dr. Hugh Cabot, who states that the method has been employed by a Norwegian (written in connection with Dalton Scholarship, 1910–11), whose name he does not recall. In an extensive review of the literature I find no reference to this subject.

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preliminary incision in the skin, with or without ethyl chloride, the needle is jabbed through the sensitive soft parts, including the parietal pleura, and, even in the hands of the expert, not infrequently pierces the lung. The procedure is distressing to the patient, and this fact alone may deter one from employing a second, third or fourth puncture when the first is negative. In a series of thirty-five thoracenteses performed on phthisis patients for the establishment of nitrogen artificial pneumothorax, I have succeeded in avoiding discomfort to the patient by a method which should be more generally employed. After freezing the skin with ethyl chloride, a ½% solution of cocaine is injected in the skin covering a area of ½ cm. Through this the hypodermic needle is inserted perpendicularly, the solution being forced gradually ahead of the needle as it passes through the layers of the chest wall. In the resulting absence of sensitiveness, the upper border of the rib below can be carefully made out, and more of the solution forced through the intercostal muscles against the sensitive pleura, which absorbs the cocaine slowly from the adjacent tissues. Puncture of the pleura then causes no pain. If the hypodermic needle is not used for aspiration, an aspirating needle can be inserted through the same channel with no discomfort. If aspiration is negative, by this anesthetic method of thoracentesis the usual fear of the patient of another *stab* is avoided, and the persistence of the operator to search further is not discouraged. If abscess of the lung has been excluded by the absence of sputum, as is invariably justifiable, and the presence of pus is still suspected, it is fair to presume after a series of negative punctures in the suspected areas that the pus is encapsulated in a fissure, or on the diaphragmatic surface. In three of my cases pus was found at operation in this latter situation and occupied the costo-diaphragmatic angle, which in the stabbing method is avoided for fear of injury to the diaphragm and opening of the abdomen. I have found more than a pint of pus retained in this angle at a point below the usual safe limit of exploratory needle puncture, namely, the eighth intercostal space. Experience has shown me that, by the cautious method above described, the diaphragmatic angle may also be explored in its entire circumference. The last case of this kind upon which I operated had survived six negative needle punctures. These discouraging results, in spite of continued leucocytosis and night temperature, resulted in a delay of eight weeks, as a result of which the pus increased over the diaphragm and forced the lung upwards, holding it there until its firm adhesions were formed. At operation an exploratory resection of two ribs was made at the safe level, where the pleural layers were found adherent. Separating them with the examining finger in a downward direction eventually permitted the escape of pus, although a new drainage point had to be established in the costo-diaphragmatic angle, evacuating a liter of pus. Convalescence of the patient has been unsatisfactory, and a large cavity corresponding to the volume of the pus still persists; in other words, a chronic empyema has developed as the result of the eight weeks' delay which will later necessitate a thoracoplasty for its obliteration.

Doubt frequently arises in the convalescence of pneumonia as to whether suppuration exists in the form of an abscess or of empyema. The presence of sputum in small or large quantities should be the main guide. Pure empyemata are ordinarily purulent pleuresies in which the infection has traversed the lymphatics through the basement membrane of the visceral pleura, and a sputum is rarely present. If, on the contrary, in the resolution of pneumonia an abscess has developed near the periphery of the lung, the visceral and parietal pleuræ may become adherent. The physical signs when the abscess cavity is full are those of localized empyema, and if the abscess is connected with a bronchus, and a purulent sputum is present, and if, furthermore, the exploratory needle, without going to any apparent depth, draws pus, the case is regarded as one of "empyema which has broken into a bronchus." I am yet to be convinced that a true empyema often finds its way through the visceral pleura and thence into a bronchus. The reverse, on the contrary, is often true.

The previously existing abscess has, through protective adhesions, obliterated the pleural space and thus prevented an empyema; and, being unable to find an exit through the chest wall, has broken centrally into a bronchus. Cases are reported of spontaneous cure of empyema by rupture into a bronchus. The considerable evacuation of sputum which gives rise to such conclusions can only escape through bronchial branches of a considerable diameter. Such are not found at the periphery of the lung. In other words, if a true purulent pleurisy of lymphatic origin reaches a large bronchus, it must first produce an abscess of the lung, which in turn perforates the wall of a bronchus. Who can deny that the abscess occurred previously, that the local or true empyema followed by extension of the abscess to the periphery, with adhesions to wall it off, or a direct rupture into the unprotected pleural cavity? The abscess, however, continues its parenchymatous necrosis, and a bronchus is entered. The clinician may have failed to note the pre-existing abscess and, having later discovered signs of empyema, concludes at the time of rupture that the empyema has burrowed into the lung. Autopsies frequently reveal necrotic lung tissue connecting with a bronchus and also with a pleural empyema, but I see in such post-mortems no evidence as to whether the abscess or the empyema was primary in origin. Morison states that interlobar empyema is the variety which most commonly ruptures into a brouchus. The two cases of interlobar empyema which I have seen at autopsy were both accompanied by adjacent abscesses of the lung. Of three cases of so-called localized empyema upon which I have operated, there was necrotic lung tissue at the base of the cavity and twice with a bronchial connection. It is

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conceivable, therefore, that the terms "localized" and "interlobar empyema" are often misnomata. Adhering to the definition of empyema, "pus within a cavity," the term should only be applied when two layers of pleura, either visceral and parietal, or two visceral layers form the opposing boundaries of the cavity. If thoracotomy is done for localized empyemata, and lung parenchyma is at the pulmonary side of the cavity, it is evidence that the visceral and parietal pleuræ are adherent as one layer incised in the thoracotomy. The condition is really one of abscess of the lung. If the inner wall of the cavity, on the contrary, presents visceral pleura with a fistulous opening to the lung, the condition is justly called a localized empyema secondary to abscess of the lung. It is this latter condition which is often unrecognized and which when undrained exteriorly may lead to rupture into the bronchus. Localized empyemata on the lateral walls of the chest are more commonly pure peripheral lung abscesses or restricted empyemata connecting with and secondary to an abscess. Those at the base of the pleural cavity are generally true empyemata limited by adhesions.

We have considered purulent pleurisy which is associated with pneumonia to emphasize its frequency as a sequel to this disease, but its diversity of origin must not be overlooked. Another group of empyemata is that which is associated with inflammatory conditions beneath the diaphragm which by lymphatic extension involve the diaphragmatic pleura and the adjacent visceral layer of the lower lobe. Abscess of the liver, subdiaphragmatic abscess and perforated duodenal ulcers not infrequently lead to this condition with or without perforation of the diaphragm, and the attention of the physician is distracted from the pleural involvement and the necessity of drainage by his anxiety concerning the abdominal conditions.

Infections of the pleura by blood metastasis are sometimes seen in scarlet fever, measles, typhoid and whooping-cough and other systemic infection. A careful chest examination should be made when the progress of these diseases is accompanied by signs of additional septic absorption. Trauma and local disease of the chest wall as causes of pneumonia are less often overlooked because of the direct association of the pleura with such conditions. I am convinced that infection of a pleuritic effusion by needle puncture is of extremely rare occurrence, and should not be considered as among the probable causes of empyema. The fact that the first needle puncture withdraws a sterile fluid and a later puncture pus ordinarily indicates that the fluid has for other reasons in the meanwhile become purulent. When the withdrawn fluid of a primary puncture contains bacteria, the approach of empyema may be suspected. Martin even recommends the aspiration of such non-purulent infected effusions to anticipate the added difficulties of a subsequent empyema. Griffiths, on the contrary, found but two of one hundred and fifty-one cases of aspiration in which the fluid became purulent, one of which was complicated with tuberculosis and the other with erysipelas.

In a series of ten cases of bronchiectasis which have come under my observation, two had been previously diagnosed as empyema. There is no real excuse for this confusion. The chronicity of the usual case of bronchiectasis perhaps originating with influenzal pneumonia, with its exacerbations in the winter season simulating attacks of grippe, together with the presence of a definite and characteristic sputum containing influenza bacilli, should persuade the diagnostician to give less regard to the local signs usually present in the region of the lower lobe, which may somewhat resemble the signs of empyema.

A group of cases to which we have not referred is that in which a differential diagnosis between thoracic and abdominal involvement is often quite impossible. In such cases thoracic or abdominal breathing are often useful in determining whether the peritoneum or the pleura are involved. In a child recently seen at the Massachusetts General Hospital, both thoracic and abdominal symptoms were present. Abdominal pain had been present, and when appendical involvement was suspected, although the abdomen was not distended or rigid, and presented but a vague tenderness in the right half of the abdomen, the chest examination revealed slight dullness in the lower right chest, approaching flatness in the axillary line. The respiratory note was not clear, but the signs were so near the diaphragm that a diagnosis of pleural involvement was doubtful. I was sufficiently convinced that the chest signs were abnormal not to recommend a laparotomy. The latter was done, however, and although the appendix was normal, a small amount of thin sero-hemorraghic fluid was found in the peritoneal cavity. The child made a normal convalescence, and on the second day after operation the signs in the thorax were somewhat more marked. The surgeon who operated was guided to a great extent by the pure thoracic breathing. Although the pathological report of the fluid was negative, it is conceivable that this was an infection which involved both the pleura and peritoneum, and that the signs in the chest were due to a similar slight amount of fluid within the pleura. It should not be forgotten, however, that abdominal symptoms are frequent when purely secondary to pleural involvement. The abdominal breathing may be in such cases helpful at times, but I suspect that this symptom should be reserved as a late resort in doubtful cases and not as a pathognomonic indication.

The x-ray should be considered as a contributing means of diagnosis of purulent pleurisy. In a series of some seventy thoracic cases which I have followed, including bronchiectasis, empyema, abscess of the lung, pneumonia, malignant disease, syphilis and pneumothorax, I have come to believe that, as a means of differential diagnosis between purulent pleurisy and some other conditions, it is very unsatisfactory. If the empyema fluid is surrounded by pleura sufficiently thickened to cast a shadow, the extent or localization of the

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empyema is not definite. If the pleura is thickened and an effusion is absent, a similar shadow is frequently seen in the plate. The shadow of a consolidated or resolving pneumonic process is frequently not unlike that produced by empyema fluid through the thickening of the pleura. The shadow of an interlobar empyema which is invariably associated with the thickening of the adjacent pleural layers again fails to aid in the localization of the septic material. The French method of slanting the rays in such a way as to throw the interlobar fissure into a linear shadow crossing the plate transversely is helpful in differential diagnosis, but with the usual anteroposterior direction of the rays the shadow of an interlobar empyema may be indistinguishable from an anterior or posterior localized empyema. It would seem, therefore, that the x-ray fails in those doubtful cases in which we need its help. The presence of pus can generally be demonstrated by a thoracentesis and other methods mentioned above, but in the differentiation between intrapulmonary and extrapulmonary pus, and between thickened pleura, fluid and pus, the radiograph may be very misleading. I have a group of plates from which one ignorant of the history and physical signs would be unable to differentiate between the various conditions which they were found to represent, and this because the shadows present were in most respects similar.

The history of the patient, in addition to the physical examination, should be the guide of the operator in determining the special form of treatment which is indicated, and it is important to decide what particular form of empyema is present before the most suitable procedure is determined. Frequently this decision is in doubt until pleurotomy has been performed.

### BACTERIOLOGY.

I believe it to be a mistake to regard the bacteriology of purulent pleuritic effusions as an important factor in the selection of treatment. The fact that pure metapneumonic empyemas sometimes are cured spontaneously should be disregarded, and it would be well, furthermore, to forget that repeated aspirations of pneumococcus pus have also resulted in cure. Every unilateral empyema should be drained by an operation, whether the material obtained in diagnostic thoracentesis is pure pneumococcus, streptococcus, staphylococcus or the three combined. In reviewing the statistics of eight writers on the bacteriology of this subject, I am convinced that their conclusions regarding the relative frequency and virulency of the different infections are of interest in prognosis, but of no significance as regards treatment. Undoubtedly the pneumococcus infections are the most benign, but free drainage should nevertheless be employed. A streptococcus empyema secondary to streptococcus infection of the abdomen or elsewhere in the body is more virulent and more unfavorable in prognosis, but all forms of empyemata, regardless of their origin and bacteriology, should be recognized promptly and drained freely, re-expansion of the lung being the main purpose from the outset.

### TREATMENT.

No better argument can be offered in behalf of early recognition of purulent pleurisy than the speedy recovery of most cases operated in the early stages. Patients so handled, though provided with inefficient drainage and lack of any kind of suction, frequently recover promptly for the reason that the lung is yet mobile, and can aid in the evacuation of residual pus. The literature on this subject abounds in reports of small groups of cases with uninterrupted recoveries of short duration, treated with or without particular methods of drainage or suction, and the recovery of such cases should be credited to their early recognition more than to the method of handling.

If a localized empyema or peripheral abscess is suspected and the combined methods of diagnosis intimate that the general pleural cavity is protected by adhesions, drainage and obliteration of the small cavity need alone be thought of. I prefer in such cases to resect a large enough area of ribs to enable free access to the cavity to stimulate growth of granulations or to suture in a skin and muscle flap to the base. If a true general empyema is present and promptly detected, as in the early stages of resolution of pneumonia, there is reason to believe that the lung not only retains its expansibility, but is not sufficiently adherent to prevent ready expansion. In such cases, it must be admitted that, with good drainage at the lowest possible point, prompt recoveries are common without artificial methods of expansion. I feel assured, on the contrary, that if such cases were drained with a tube and no dressing were applied covering the tube, in other words, were so handled that air could pass freely in and out of the chest, re-expansion of the lung would be impossible and that such a case would necessarily result in the permanent cavity formation—chronic empyema. If the diameter of the tube is equal to or greater than the diameter of the laryngeal opening, by the well-known principles of physiology the normal negative pressure within the thorax will be lost, and if atmospheric pressure exists within the chest, the normal elasticity of the lung in the absence of adhesions (which we assume in this group of cases) will result in its retraction. The explanation of the recovery in such cases without artificial suction, seen most commonly in children, rests in the fact that the drainage orifice is always covered with a pus-soaked mass of gauze which covers the opening more completely at inspiration, resulting in a partial negative pressure between the pleural layers which inflates the lung. All expiratory efforts with the glottis closed, as in coughing, produce a positive pressure within the lung of the unoperated chest, which, in turn, partially inflates the lung of the diseased side, at the same time forcing intrapleural air out of the drainage opening. When the latter is partially or completely closed at the next inspiration, the lung is more and more expanded, until adhesions

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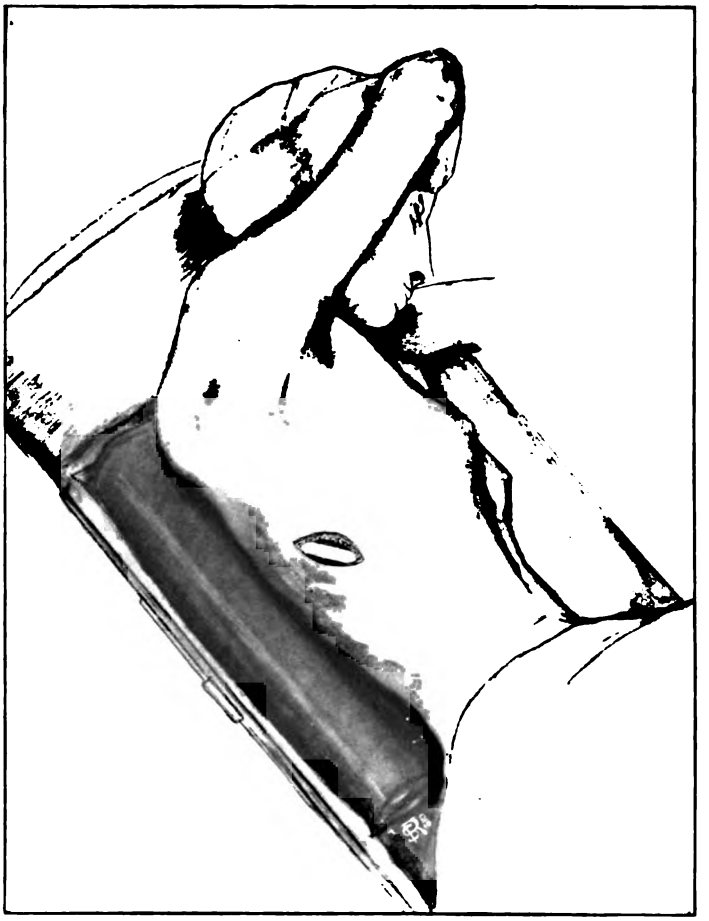

FIG. 1. To show semi-recumbent sitting position for empyema operations. Note sand-bag.

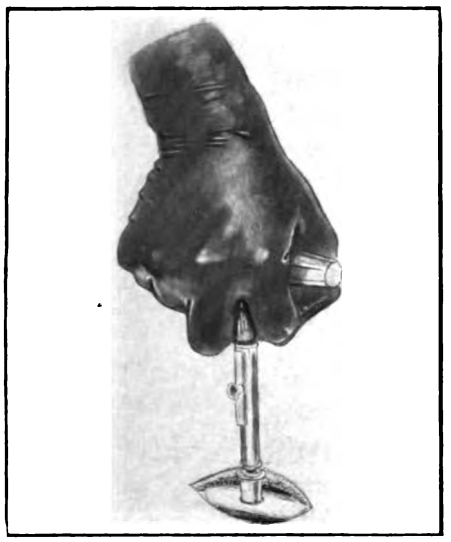

FIG. 2. Trephining the rib.

FIG. 3. Anesthetising the posterior periosteum and parietal pleura before removing bone button.

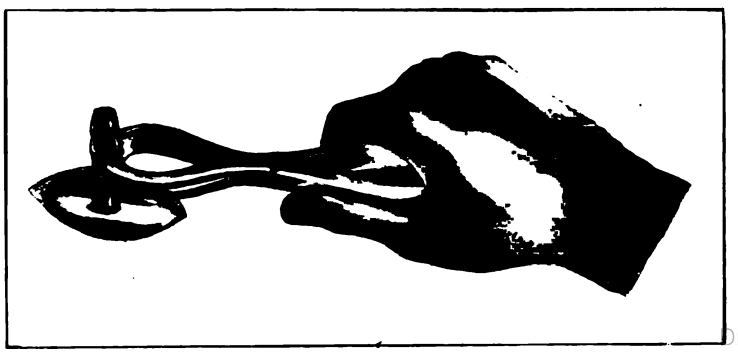

FIG. 4. To show author's threaded metal drainage tube screwed into the rib with

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form in the expanded condition, thus gradually obliterating the pleural cavity, from which by the same process the pus has slowly been evacuated.

Granting, then, what I regard as an indisputable fact, that all cases of acute empyema with a drainage opening of 1 cm. would result in partial retraction of the lung and the existence of a permanent cavity if the thoracotomy wound is not partially or completely closed at inspiration, we are forced to admit that either a valvular action must be provided at the point of drainage, or actual suction applied. Many operators who disclaim the necessity of artificial suction are unmindful of the fact that in all of their cases the normal suction effect of the expansion of the chest wall has been preserved to a greater or less degree by the mere application of a gauze dressing to the drainage orifice. Some surgeons, including Cabot and Schede, recognizing the impossibility of utilizing chest wall suction and not relying upon the valvular action of the gauze dressing, have employed mackintosh or rubber bandages outside the gauze to make secure the air-tight closure of the opening at the time of inspiration. Despite the efficiency of gauze alone with a firm swathe in a certain number of cases, I believe that every case of acute empyema, though recognized early, should have at least this artificial support to the suction power of the chest wall.

A second group of empyema cases are those in which the acute stage has been neglected and the pus allowed to remain undrained for a longer period of time. Such cases may have a large accumulation of pus, and are ordinarily provided with free drainage, and the surgeon, conscious of his many successes with earlier cases without artificial suction, applies the usual gauze and binder dressing which, though constantly soaked with pus, does not aid in the re-expansion of the lung, and a chronic pus cavity results. Cases of this group are constantly being discharged from hospital wards to local physicians, the surgeons often remaining blissfully ignorant of the prolonged convalescence and necessity of further operation which frequently attend such cases.

To this group of cases belong those which may have been promptly recognized but insufficiently drained. It is the general practitioner and not the surgeon who is usually responsible for cases which come to further operation after a preliminary but incomplete drainage by the local physician. By this I mean that the drainage point selected has been too high to empty the cavity, and perhaps too small to allow the free escape of pus and fibrin. Frequently, too, an intercostal incision has been made without the introduction of a permanent trocar or tube, which incision often closes before the drainage is complete. In this way an acute, early detected empyema may be converted into our second group, and the lung, although originally non-adherent and expansible, has become adherent and is approaching the chronic form. Through the history and duration of the case information may thus be obtained as to which group of cases is to be dealt with by the operator. When this point remains yet in doubt, a conclusion should always be arrived at by introducing the finger into the thoracotomy wound to see if the lung is palpable. If, as is usually the case in early cases, the lung is felt touching the finger at inspiration or in gagging or coughing under light anesthesia, it may be assumed that the lung is not firmly adherent in a retracted condition. If, on the contrary, the lung is not felt when the examining finger plugs the chest wall opening, it is conclusive evidence that the lung is prevented from expanding and that simple methods of aiding the chest-wall suction must be supplanted by artificial suction and breathing exercises in the attempt to force the lung to its normal position. In the above different conditions I find the explanations of the much-disputed question as to why the lung can sometimes be felt partially refilling the pleural cavity as the pus escapes, and why the lung remains out of reach. It must not be forgotten that the size of the opening makes a difference in this digital exploration. If air can pass the examining finger freely, negative pressure at inspiration is practically lost and there is no force acting to re-expand the lung. In a recent discussion one surgeon took the view that the lung could always be felt "coming down" towards the opening. Another replied that he had not had this experience. These different views raise the question of how long had the pus been present before operation; did the examining finger plug the opening; and was there any source of inflation from the opposite lung by closure of the glottis in the spasms of light anesthesia?

If the history and digital examination prove a definite failure to re-expand, a curved instrument, such as a uterine sound, should be inserted to establish the position of the retracted lung, and to determine the extent of the cavity. Drainage adequate both as to size and position of opening is then of first importance. If the examination reveals that the bottom of the cavity is more than an inch below the level of the first opening, a second should be made at a dependent point guided by the examining finger within the thorax. Drainage from two openings may thus be obtained, or the upper one may be closed, though infection in the latter is likely to occur. I am not in sympathy with Fowler, who states that adhesions may occur in the costodiaphragmatic angle raising the level of the bottom of the cavity so that the drainage need not be at the lowest point. This advice is dangerous and more harm has been done by high drainage and the persistence of residual pus below the opening than by low drainage which may become occluded by adhesions.

When thus confronted with one of this group of cases in which the lung fails to re-expand, the nature of the difficulty should at this time be determined. If the duration of the disease and neglect of drainage have not been sufficient to classify the case as one of chronic empyema, and if exploration of the cavity indicates that the lung has not lost its expansibility and may not be permanently adherent, the indication is to remove the septic material. A second and equally important indication is the effort to encourage the

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re-expansion of the lung. In certain cases the latter will be successful, while in others it may fail, but before concluding that the case must come to further operation for freeing the lung or obliterating the cavity, the patient should at least have the benefit of the doubt. If it is evident from the outset that artificial suction would be of no avail, the indication is drainage with a resection of ribs too great to permit of suction, but free enough to prevent the accumulation of a residual pus and to allow free introduction of large tubes, gauze and instruments by which the whole cavity may be cleansed. Such procedure is but preparatory for later operations which cannot be discussed in this paper on acute empyema; but whether these future operations be decortication of the visceral and parietal pleuræ to enable expansion of the lung, or extensive thoracoplastic operations to cave in the chest wall, or the Beck treatment by bismuth and vaseline injections, a free opening is essential to a sterilization of the cavity and a means of escape for an excess of bismuth in the Beck treatment. Such open evacuation results in a marked improvement in the patient's condition and resistance for further proceedings. But this very method of handling this group of cases to which chronic empyemas strictly belong is, alas, too often employed in our second group, which are by no means beyond the possibility of re-expansion by methods of artificial suction. To such treatment we shall now refer.

We have advocated in the early cases of the first group a persevering maintenance of the suction provided by the chest wall which is at least partially accomplished by a gauze dressing and a binder and better by the mackintosh dressing. These pseudo-suction methods are only advocated in those instances where better facilities for suction are not at hand. If the case is suitable for the use of negative pressure, and any suction device is available, its utilization is the best treatment.

Methods of suction which leak are the predominant ones in hospital clinics, but are better than no suction at all, such as is seen in the use of a spool drainage tube covered with a frequently renewed light gauze dressing and a loose cheesecloth swathe. One can often hear air rush in and out of the tube during the respiratory movements, and except in cases which we have classified in our group of chronic empyemas awaiting further operation, this sound is evidence of neglect.

The method of Buelau is an instance of a definite effort towards re-expansion. A certain amount of negative pressure is undoubtedly maintained by this method. The intercostal introduction of a large trocar which is replaced by a close-fitting tube is open to criticism because of the small caliber of the trocar which could be introduced between the ribs of certain cases. He furthermore depends entirely upon siphonage or suction by immersing the long pus-filled drainage tube in a basin of antiseptic solution on the floor. Although no actual suction is employed except the weight of the pus columns, air certainly cannot enter the thorax at inspiration, provided the tube connection with the chest wall is air-tight. A prevalent and justifiable opposition has developed against intercostal drainage of empyema, but if done by Buelau's trocar method it is less open to attack than when a simple intercostal incision is made and a tube carelessly inserted. Such drainage invariably results in leakage around the tube which renders the suction less adequate. It must be admitted that the tissues punctured by a large trocar, for the very reason that they tend to prevent leakage, at the same time tend to compress the tube. It is a simple method with some advantages, and must at least at the outset favor drainage and re-expansion.

The method of Perthes has attracted much attention and is commonly used in European clinics. Three to 5 cm. of one rib are resected, a rubber tube supplied with a collar is inserted, the region of the wound around the opening is smeared with lanoline to favor the adhesion of the collar to the skin, and wide flannel strips stitched to an occlusive dressing of rubber membrane are brought around the thorax. Lenhartz has favored the adhesion of the collar by sticking it down with gauze and collodion. A more rational method of rendering the thoracotomy air-tight is that of Cotton of cementing a rubber collar to the skin with gutta-percha paste. Perthes, in addition to abandoning the intercostal method of Buelau, is not satisfied with siphon drainage, but employs actual suction by means of a Bunsen air-pump. Perthes, by rib-resection and larger wound, sacrifices the tendency of the tissues to hug the drainage tube, as in Buelau's method, necessitating a somewhat complicated technic of applying an air-tight collar to hermetically seal the edges of the opening, nevertheless is able to introduce a larger tube which is undoubtedly more efficient in removing fibrin and lymph accumulations. Operators in this country who are convinced of the necessity of some method of artificial suction frequently excise a rib, insert an ordinary tube or spool, stitch the skin and muscle close to the drain, and attach some sucking device, such as a Politzer bag or a series of water-bottles for hydrostatic suction. But those who have followed the convalescence of cases so treated will doubtless agree that from a mechanical standpoint, to say nothing of surgical results, these methods have failed. I venture to suggest that the cases so treated which have not resulted in permanent cavities, and doubtless there have been many, were cases which would have resulted in drainage and re-expansion by the gauze and binder dressing. In other words, the apparatus has been given the credit of the cure when its mechanical action has usually been worthless.

We have not mentioned a method of valvular closure of the drainage tube at the time of inspiration. It should be borne in mind that all methods which we have considered are supposed at least to accomplish inspiratory closure, although the tube remains patent; but the resistance of the suction or siphon negative pressure being greater than the intrathoracic pressure, the end result is like unto the complete closure of the tube as in the valvular methods. Suction and siphonage,

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however, continue during expiration aiding in the escape of pus, while in the valvular method gravity or forced expiration are alone depended upon to remove the fluid. Three English writers, Baylor, Hutton and Williams, have employed the valve idea. A gutta-percha nipple slit at the end and enclosed by a piece of glass tubing is employed by Hutton. Williams uses a rubber valve such as may be obtained from the air-bag of an ordinary spray-producer. Baylor employs a rubber valve enclosed within a metal casing.

Thiersch has simplified this valvular method by attaching to the Nélaton catheter, which is introduced between the ribs by the trocar method described by Buelau, a thin rubber tube which is easily collapsible by the negative intrathoracic pressure which is produced at inspiration.

To recapitulate, these and innumerable other devices have been employed in the drainage of empyema, all of them embodying one of three principles, — siphonage, suction and valvular action. Intercostal trocar puncture, and rib-resection "with or without" the use of a rubber collar, constitute the two main divisions in the method of thoracotomy.

In scrutinizing the various methods of siphon and suction drainage, some of which we have mentioned, it is evident that the key to the situation is the amount of leakage which may occur outside of the thoracotomy wound. Leakage elsewhere in the apparatus will also lead to unsatisfactory results, but we may presume that the usual point of leakage is around the drainage tube, a condition which I have repeatedly seen in different methods employed, and which doubtless occurs at the end of a greater or less period of time in all methods of drainage. Statistics given by the advocates of siphon drainage with a trocar puncture show that leakage may begin to occur within a week, necessitating the removal of the tube and its replacement by a larger one to fill the gap in the tissues which has resulted from the prolonged presence of a foreign body. *The permanency of the air-tight closure is undeniably the crux of the situation.* It is well known to those who have performed rib-rescetion and introduced tubes protected by rubber collars, rubber dam, adhesive plaster, lanoline, zinc ointment, gutta-percha, cement and other agents, that leakage is of frequent occurrence and that at best it can only be prevented by the most painstaking and continuous effort. The personality of the patient frequently determines the success. In a restless individual it is often impossible to maintain the intercostal tube or the larger tube through resected openings with their protective devices.

### RIB-TREPHINING; A NEW METHOD.

The importance of maintaining air-tight suction leads me to advocate a method of rib-trephining, which I have employed in cases belonging to the first and second groups to which we have referred with greater success than with any of the other methods. When first employing this treatment, after trephining the rib I inserted a rubber tube selected to fit as tightly as possible, holding it in position by adhesive plaster and safety-pin or with a stitch through the skin. This prevented leakage for a number of days and was a great improvement on all other methods which I have employed. Even this leaked too early, and to prolong the period of air-tight closure I substituted a metal tube with a thread cut on one end and corrugated for the attachment of rubber tubing on the other. (Fig. 4.) These tubes are made in different sizes and of different lengths to suit the individual case, depending on the size of the rib and the depth of the chest wall tissues to be traversed. The less the tube projects beyond the skin, the better, as it receives better support by the soft tissues and the skin. It is not necessary to allow the corrugated portion to project beyond the skin sufficiently to support the end of the rubber tubing, for this may be applied to a depth within the soft tissues before the latter are sutured around it.

The position of the patient on the operating table has been the subject of considerable dispute. It is, of course, important that position should limit the excursion of the unoperated chest as little as possible. If, however, it is impossible to employ this position and at the same time have good exposure of the point selected for drainage, freedom of expansion of the unoperated lung should be sacrificed to good exposure. Operators have described cases in which they believed that death or collapse occurred because of the cramped condition of the sound side. I am of the opinion that the accidents in these cases have not been due to this fact, but rather to the method of anesthesia, or to the sudden introduction of air into the operated thorax. This sudden production of pneumothorax may cause no symptoms provided adhesions prevent the complete collapse of the lung. In most cases of purulent pleurisy, adhesions exist and the mediastinal pleura is thickened, rendering the mediastinum less prone to the oscillations which occur under normal conditions and which I have previously described.[1] A normal mediastinum may, following a sudden pneumothorax, bulge to the sound side at inspiration, thus restricting the expansion of the healthy lung. At expiration it may deviate to the opened side and retain an excess of residual air. Symptoms of dyspnea or collapse may thus come on in certain early cases of empyema, and although such cases are extremely rare, owing to the usual adhesions, it is conceivable that this rather than the cramping of the unoperated side during an empyema operation may explain the above fatalities.

As a safeguard against the ill-effects of sudden pneumothorax in patients susceptible to it, differential pressure may be used. In this series of thirty-four empyema operations I have employed a positive pressure cabinet in three cases and have always had apparatus at hand to use if necessary. When apparatus is not available for facilitating the work of the unoperated lung, and symptoms occur, the thoracotomy wound should be closed at the end of expiration with the hand

[1] "Experimental Surgery of the Lungs," Ann. Surg., February, 1908. "Surgery of the Lungs under Positive and Negative Pressure," Surg., Gynec. and Obstet., March, 1909.

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or finger until a suction device can be applied. As will be seen later, the possibility of this pneumothorax accident is obviated by the rib-trephining method.

In a series of one hundred and fifty thoracic operations on animals in which for one reason or another the function of one lung has been seriously impaired, I have taken great pains to lay the convalescing animal on the operated side to enable the free expansion of the remaining lung. To my surprise the animals have generally rolled over to the opposite position when sufficiently recovered from their anesthesia, and have frequently lain upon the sound side from preference. I have operated on many thoracic cases in the human in which I have disregarded the sound chest by placing the patient in a lateral or even semi-prone position in order to have free access to the operative field, and with the intelligently applied anesthesia by Dr. Freeman Allen I have never seen dyspnea or cyanosis such as would occur if the unoperated lung were not functionating sufficiently for oxygenation of the blood. Doubtless a combination of ready accessibility of the operative field and an unrestricted attitude of the opposite chest is to be desired. Fig. 1 illustrates the position which I am in the habit of using with an ordinary operating table when no special table for thoracic surgery is available. The head of the table is raised both to favor respiratory function and to prevent the regurgitation of sputum. Inasmuch as the point of attack is ordinarily posterior to the anterior axillary line, the straight dorsal position hampers the operator. The patient is first placed in a lateral position, the lower buttock resting upon transversed sand-bag which is kept from sliding by tapes attached to the head of the table. While in this position the second long sand-bag is placed against the inclining portion and the patient allowed to fall back in a semidorsal position. Efforts to obtain this position by the use of rolled sheets and blankets are futile, and within a short time the patient's position is no longer the one desired.

### ANESTHESIA.

General anesthesia is indicated in nervous patients unsuited for local anesthesia, but should, I believe, be avoided in most cases. When general anesthesia is indicated, the skilled anesthetist will choose that which seems the best suited to the particular patient. Nitrous oxide and oxygen I do not consider appropriate in thoracic conditions because of the tendency to cyanosis, which may be misleading, and because the already restricted air-supply should not be further reduced. Dr. Allen has convinced me of the success of the preliminary use of anesthol followed by ether and perhaps interrupted with chloroform. Under this selective anesthesia, with the concurrent use of oxygen applied to the end of the ether cone, in a series of thoracic operations I have not noted the least unfavorable symptom, thanks to its intelligent application by a skilled anesthetist.

Although general anesthesia when it is not abused rarely complicates the prognosis in empyema cases, local anesthesia is the methd of election. Cocaine can rarely be used in such operations even in mild solutions without causing some evidences of toxic absorption, and for this reason I prefer novocaine. The rib-trephining operation is especially adapted for local anesthesia as described below.

In selecting the point of drainage, no definite rules can be laid down, especially when limited areas of purulent pleurisy are to be drained. If, on the contrary, the empyema appears to be a general one, the drainage should be established at the point best adapted to the upright and not to the recumbent position. Thus the posterior or even the anterior axillary is preferable to the scapular line, provided the opening is made at the lowest possible point in the region of the costodiaphragmatic angle. The eight rib in the posterior axillary line is a safe point, but the same rib in the scapular line is too high and may be encroached upon by the lower angle of the scapula, causing great inconvenience in the maintenance of tube or the changing of dressings. The region of scapula should never be selected in the rib-trephining method, inasmuch as the metal tube may be pressed upon accidentally or dislodged.

### TECHNIC.

The skin is anesthetized, incised for two inches over the selected rib, dissection is then carried on under further local anesthesia. With gentle retraction of the edges of the wound a novocaine compress is applied to the periosteum with pressure for at least thirty seconds; this can then be scraped away for a length of 2 cm. without causing pain. A cranial trephine of the exact outside diameter of the tube to be inserted is then applied directly over the center of the rib (Fig. 3). Care should be taken to leave a bridge of rib at least 3 mm. in width above and below the trephine opening. In one case I neglected this and a fracture of the rib with dislodgment of the tube resulted. No pain is experienced by the cutting of the trephine until the posterior periosteum is reached. If pressure on the rib causes pain, it is because the empyematous area in that region with its concurrent pleurisy is in itself tender to pressure, as it is often found to be even by percussion. When this is the case, the rib may be supported by counter-traction; but with a sharp trephine gently applied the button may be removed with very slight pressure on the rib. When it is evident that the posterior periosteum is reached at any point in the trephine's circle, the needle should be inserted in the crack (Fig. 3) and the periosteum and over-sensitive pleura anesthetized, even if the solution is allowed to leak into the pleural cavity. Traction on the pleura caused by removal of the button is thus rendered painless, as is also exploratory puncture. After removing the button with mouse-tooth forceps, a Cabot trocar should be inserted into the pleural cavity to verify the selected point of drainage. This should be done with caution so that only a drop or two of pus escapes and does not come in contact with the superficial tissues. One of the metal tubes is then screwed

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with the fingers into the trephine opening, and in spite of a lack of female thread the bone tissue is yielding enough to accept and hold the male thread, and for the last few turns the tube should be gripped with lion forceps. (Fig. 4.) It is quite surprising to find that the tube with its quarter-inch grip on the rib is held firmly and cannot be dislodged with the fingers. The muscles and skin, which should have been spared infection, are now sutured. A collodion dressing with a circular opening is then applied, and with the wound thus protected the complete opening of the pleura is indicated. This can best be done by the use of a pointed or blunt bistoury or a long-bladed scalpel, which is passed through the metal tube to the pleura. Great care should be taken to do more than merely incise the pleura, the knife being used for the purpose of excising a section of pleura the size of the tube. During this process, pus, of course, escapes freely, but runs directly into a basin and need not come in contact either with the skin or sterile sheet or even drench the floor. A rubber tube some six inches in length with a clamp at its outer end is then slipped over the corrugated portion of the metal tube and tied. No outside dressing or swathe is needed, and after sufficient removal of the pus contents at the time of operation the clamp is reapplied to the rubber tube and the patient sent to the ward.

It may be noted that by this procedure infection of the soft parts can and should be prevented, and that this avoidance of infection favors the tighter closure of the soft tissues around the tube, even when necrosis may commence within the rib.

An advantage of some importance which should be mentioned in this connection is that while pus is allowed to escape and aided in so doing by the subsequent methods of suction, air has at no time been allowed to enter the cavity. In other words, pneumothorax does not occur. In most of these cases the pus is under some tension, especially at expiration, and it will continue to fill the tube both at inspiration and expiration until the retained pus is no longer under pressure. For this reason it is advisable to discontinue the drainage of pus through the metal and rubber tube in the operating-room just as soon as its free flow is established, and before the tension is lost and air can enter at inspiration. The tube is clamped and the patient returned to bed, the clamp not being removed again until either siphon or suction drainage is established.

Having thus established an air-tight thoracotomy wound, a great effort should be made to avoid leakage in any part of the apparatus. In most forms of suction drainage a reservoir bottle is inserted between the tube leading to the chest and the suction device. This apparatus has failed because of leakage at this reservoir due to the fact that bottles with air-tight tube openings are not easy to procure. A common method is to bore two holes in a rubber cork wired into a wide-mouthed bottle, or to use a two-necked Wolff bottle with afferent and efferent tubes through air-tight corks. These forms of apparatus are habitually unsatisfactory in a hospital clinic, and in my cases I have substituted a piece of glass tubing two inches in diameter and ten inches long tapered to nipples at either end over which rubber tubing may be slipped. This device has the added convenience of keeping out of harm's way and of being applicable to ambulatory patients.

Having now two segments of the suction apparatus air-tight, any form of suction may be attached to the distal end of the reservoir. The choice of mechanism should depend upon the means at hand. If a water faucet is handy, a Bunsen air-pump as employed by Perthes is a steady and excellent means. A straight tube leading from the reservoir to a bottle of water on the floor can be attached producing a siphon suction. A small bivalve hand-pump, such as employed in aspirators, can be connected with the reservoir. With such a pump attached, sufficient negative pressure will be maintained within the reservoir to accomplish suction drainage. A small, noiseless, rotary air-pump can be likewise attached with electric connections to the lamp socket, providing a low but constant negative suction. Another commonly used suction device is a pair of bottles in which hydrostatic pressure is produced by allowing water to flow from one to the other, the two being at different levels. If the corks and tubes in such bottles are air-tight, the water will exert its suction but remains at a given level, thus avoiding the constant reversal of the bottles when one is filled and the other empty. If such bottles are used, the importance of their being hermetically sealed cannot be too strongly emphasized.

The shortest duration of convalescence which I have obtained by this method has been four weeks. In one case the tube remained fixed without leakage for three weeks, in which time the expected results will have been obtained. In the one fatal case thus treated in which death was due to an erysipelas infection two weeks after operation, an autopsy was obtained. The lung was found to be entirely re-expanded and adherent to the chest wall in its normal position. In this case previous to operation the chest was flat to percussion as high as the fourth behind and the third rib in front. Three pints of pus were evacuated at operation and during the two subsequent days. The air-tight suction has been sufficiently effective to withdraw through the tube clots of fibrin four inches long, and although occlusion of the tube may occur, there is less danger of it than in any other method.

### CONCLUSIONS.

Cases of purulent pleurisy may be divided into three classes: Acute, subacute and chronic, the the first and second corresponding to the two groups which we have considered in this paper.

Suction or siphon drainage aid in the re-expansion of the lung in all cases of the first group; in most of the second; probably in none of the third.

Suction even though inefficient is better than no suction provided suction is constantly applied.

Prevention of leakage requires above all things

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an air-tight thoracotomy wound. This is best obtained by the rib-trephining method with the application of a threaded metal tube.

The particular form of suction device applied to the air-tight wound will depend upon the means at hand.

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## SCOLIOSIS.

BY E. H. BRADFORD, M.D., AND ROBERT SOUTTER, M.D.

THE practitioner of medicine is in need of definite information as to the results to be obtained in the treatment of scoliosis, as well as to the best method of management of scoliotic cases. Textbooks instruct students; monographs, reports of investigations, aid specialists, but the practitioner needs to know what to advise a mother as to the management of the case of a daughter, afflicted with a crooked back, as to the expectation of benefit which can be offered and the necessary cost of treatment in time or money.

For practical purposes cases with curvature of the spine can be classed as: *First*, the weak backs; *second*, the curved backs; *third*, the twisted backs.

It is the latter class, or true scoliosis (i. e., spinal curve with structural change in cartilage, ligaments or bone), which is of special importance. The questions in regard to this class are:

(1) Whether a scoliotic case is likely to grow worse if untreated;

(2) Whether it is likely to grow better if untreated; and

(3) Whether the curve can be corrected under treatment.

In answer to these questions, it can be stated definitely that every case of true scoliosis, i. e., a twisted back in a young growing girl, is in danger of an increase of the deformity, the danger being in proportion to the extent of the existing deformity, the youth of the child, i. e., the num-

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ber of growing years. The general condition of the patient is also a factor; the weaker the child, the greater the danger.

It can be said that the curve will not grow better if untreated. The superimposed weight of the head, arms and upper part of the trunk presents always a force which tends to aggravate the deformity. The weight falls wrong, the spine being out of line, and it is difficult if a twist in the spine is present, and the patient is active, to prevent the superimposed weight from falling wrong.

The tendency to correct growth inherent in health may prevent an increase of the curve, but it is not sufficient to overcome a curve and twist with structural changes of bone already established.

The nature of scoliosis has been accurately defined by Nicoladoni, and it may be well for the practitioner to bear in mind his definition: "Scoliosis is a deformity caused by excentric weighting of the spinal column; this leads to a twist as a result of the sides yielding or twisting, which consists of a movement in rotation of the individual vertebræ to the convexity of the curve. Finally, there is a distortion of bone structure, disarranging the arrangement of the vertebral planes horizontally, vertically and saggitally, and of the symmetrical shape of the vertebræ."

As Feiss has pointed out, there is, in addition

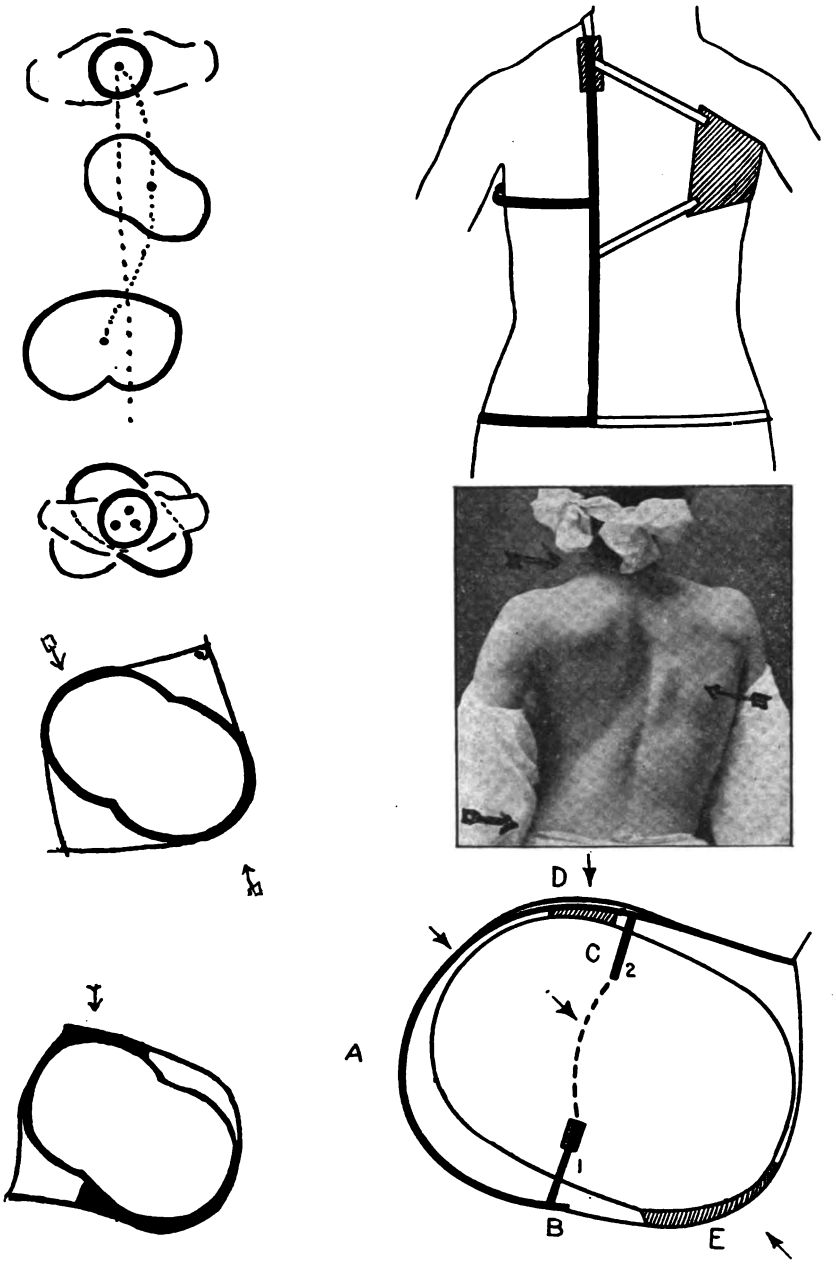


Fig. 1.
Illustrating points of pressure required for correction in an ordinary case of structural scoliosis.

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to the original influence which contorts, a distorting force from the patient's attempt to balance and hold the trunk in line.

In answer to the question whether cases of fixed curve can be successfully treated, many surgeons have been led by the complexity of the mechanical problem to regard scoliosis as not within the region of practical therapy, arguing that as it is impossible to control the necessary condition, expectancy and an observance of the laws of hygiene with gymnastics are all that can be honestly advised. Such an acceptance of defeat, however, is not in accordance with the spirit of modern surgery, nor with the facts as at present collected. It is evident, however, that proper treatment should be a consistent one during the growing years, and must meet the conditions surrounding each case, home care, social environment and financial resources.

Mr. Heather Bigg aptly compared the correction of scoliotic curves to a straightening of a curved cucumber by placing it while growing in a glass cylinder; as long as growth continues, under proper pressure the growth itself can be made to serve as a means of correction. If a young tree is growing crookedly and side pressure is applied, the tree becomes straighter, and the same may be regarded as true of a growing spine. Nor is stiffness in the curve to be regarded as an obstacle to correction, for professional tumblers and acrobats are able to increase the flexibility of the spine at desired points. Even some irregularity in the shape of growing bone cannot be regarded as preventing the possibility of correction. It is known that bone can be changed in shape by pressure, as the flat-headed Indians, and dentists, altering the shape of the jaw, have demonstrated. Experimenters have shown that by pressure a spinal curvature can be developed in dogs, and inferentially by the same means they can be corrected. From these facts it may be claimed that structural changes of moderate degree in the spines of growing girls do not offer insuperable obstacles to correction; it is simply necessary to devise the least objectionable, least injurious and the most effective means of exerting correcting pressure and furnishing the patient with the best efficient pressure apparatus; which can be worn for years, willingly if necessary; which can be removed, and applied daily without the skill of an expert; which permits muscular exercises to strengthen the shrunken muscles, and which will not imprison and weaken important muscles through atrophy. It is particularly important that the apparatus should not be unsightly or uncomfortable, for the factor of the patient's willing co-operation and good will are necessary in a treatment which needs to be carried on for a long time. The natural vanity of a young girl is needed as an aid rather than as an obstacle in treatment, which must be carried on with determination and persistency for years.

There are many appliances which are used for this purpose, of varying efficiency. The writer for the last few years has made use of one which seems to present some advantage. The nature of the appliance can be more readily seen by the illustrations than by any description.

The appliance is light and not at all disfiguring; it can be worn under the clothes, and the amount

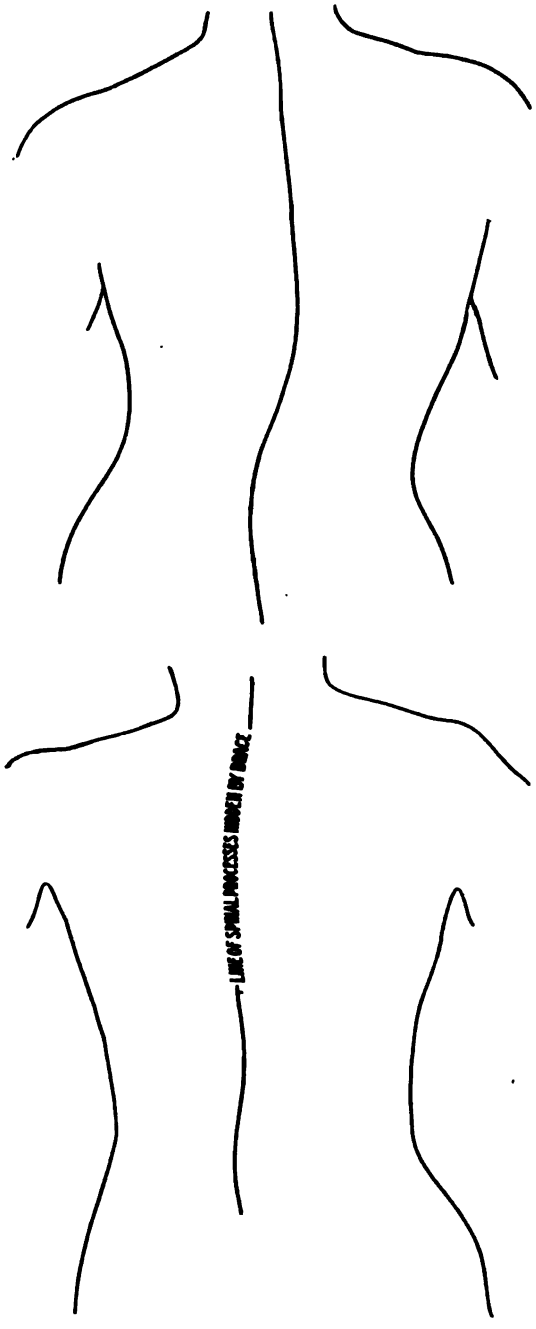


Fig. 3.
Tracings of case shown in Fig. 2 before and after application of brace.

of pressure which can be exerted by this apparatus is more than is ordinarily furnished by a removable plaster jacket.

The appliance is an ambulatory one and can be worn during the day time; in severe cases, however, it is important that there should be cor-

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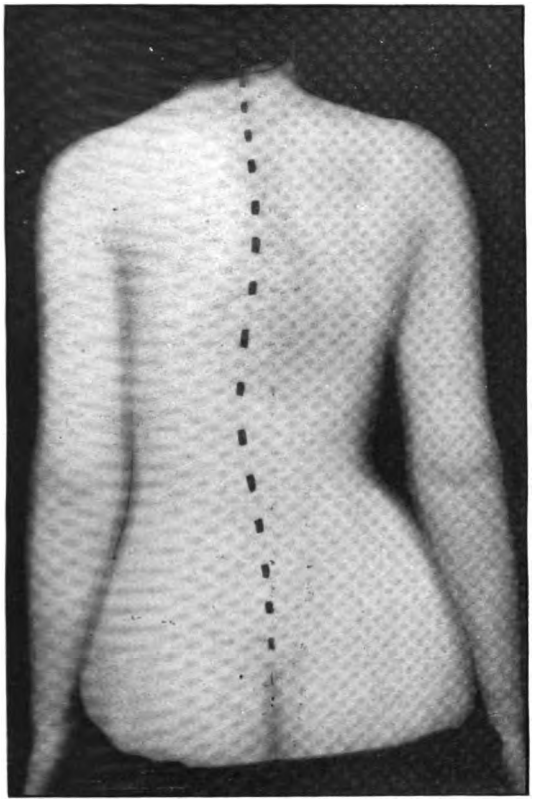

FIG, 2, *A*.
Case of scoliosis before application of brace.

FIG. 2, *B*.
Same case brace applied. Front view.

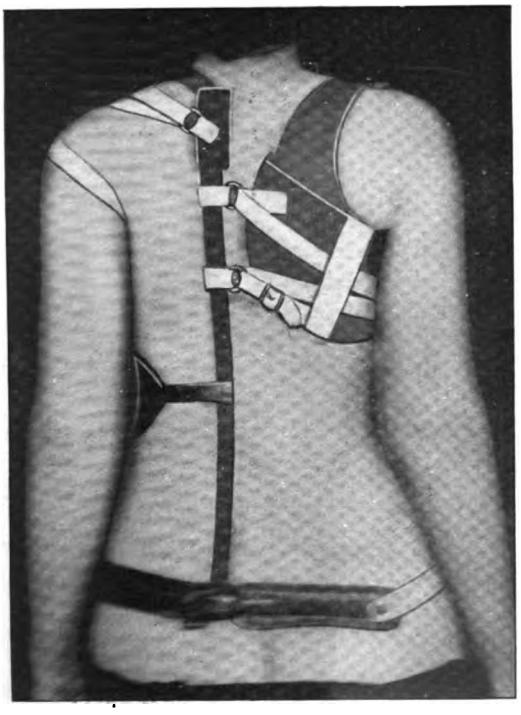

FIG 2, *B*.
Same case brace applied.

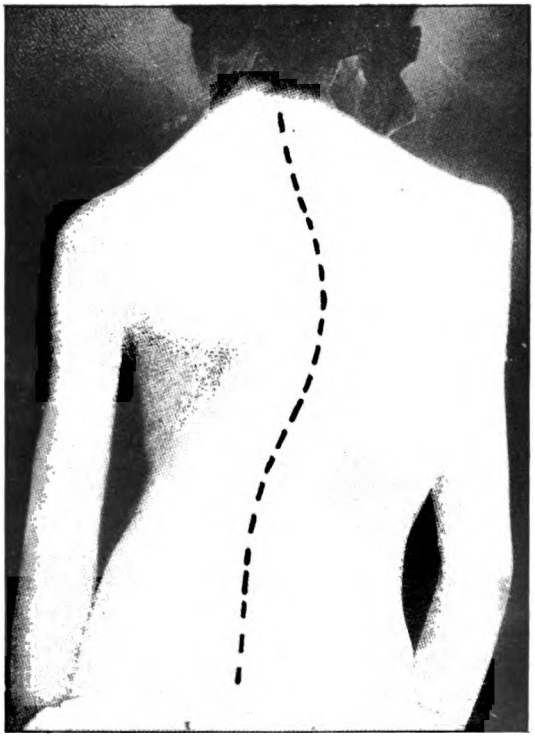

FIG. 4, *A*.
Resistant lateral curvature in a girl of fourteen before treatment with plaster jackets.

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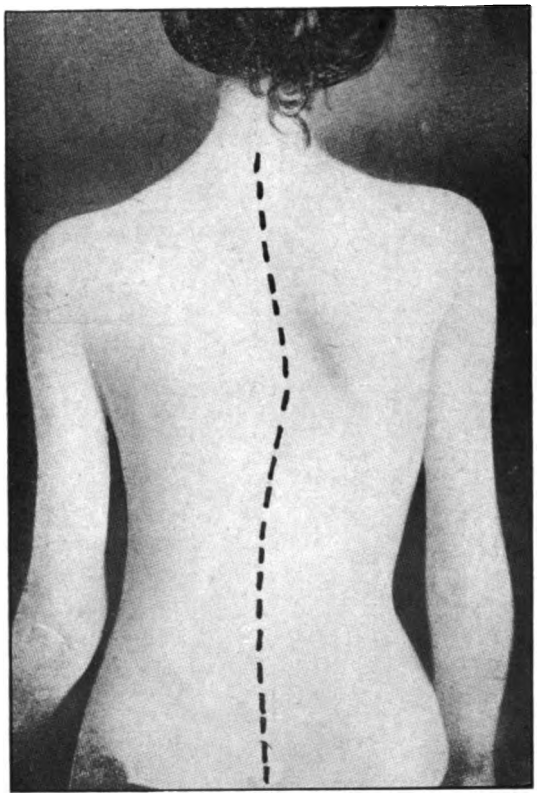

FIG. 4, *B*.
Same case after three month's treatment with two plaster jackets.

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rection at night as well as day, and as the trunk changes its shape in the recumbent and standing position to a degree, a night brace can be made to exert a more effective lateral pressure, the patient being recumbent, than is possible with a day brace, while the patient is erect. For this purpose plaster or leather removable appliances with attachments furnishing increased pressure at desired parts made from a corrected plaster cast will serve; they should be made long, holding the pelvis and upper thighs, and should reach to the neck.

The most effective method of straightening a scoliotic curve is undoubtedly that exerting constant pressure by means of a permanently worn corrective plaster jacket. As it is non-removable, it exerts a constant correcting force.

There are many ways in use for the application of corrective plaster jackets. The method preferred by the writer has already been described and need be mentioned here briefly. It consists in placing the patient during the application of the jacket in as corrected a position as is practicable by means of straps pressing upon the convexity of the patient's trunk and connected with the four uprights of a gas-pipe frame, in the center of which the patient is seated.

The amount of correction at any one sitting is to be gauged by the patient's endurance, as well as by the stiffness of the curve.

It is manifest that a plaster jacket should be arranged so as not to press upon the concavities, and, if the curve is not a low one, that the jacket should reach above the shoulder and include the neck. By the judicious cutting of windows, room for expansion of the trunk concavities can be given without interfering with the corrective value of the corset.

It is inadvisable to continue the use of a non-removable stiff corset for longer than three months, but constant pressure correction should be continued in all resistant cases for a long time after the removal of a permanent jacket, usually during the period of active growth.

Removable plaster, leather or celluloid jackets are of service, but the brace mentioned by the writer has certain evident advantages and its efficiency demonstrated to the writer after through trial in the last three years.

The value of daily special exercise is incontestable. Exercises are to be used not only to strengthen the muscles, but also to restore flexibility to contracted portions of the spine. The subject of special exercises, however, is one which does not come in the scope of the present paper. Such exercises can be made so as to require little apparatus, and directions can be given to an intelligent mother or nurse, with change from time to time with the child's growth. The exercises should be taken daily and can be in part done at home. Although these exercises may be simple in execution, they need to be carefully planned for a definite purpose, changing with the changes in the patient's condition. For this reason they require careful direction from time to time from a surgeon of experience in treating of scoliosis in its different stages and development. The directions for changes in exercises in the use or removal of pressure appliances should be given at stated intervals, varying in frequency with the condition of the patient.

During the past thirty years a number of cases of scoliosis have presented themselves for treatment to the writer. In many of these careful record was made as to the progress and results of treatment. In some cases the condition several years after treatment had ended was noted. All known means of treatment were tried in these cases, and in many the value of new and suggested methods was tested. Out of several hundred cases, the following have been selected as illustrative of the different measures which will be found beneficial.

*Light case with structural changes treated by exercises:*

Case 1. F., young lady sixteen years of age, with curve as indicated in the accompanying measurement record, was treated by flexibility and development exercises for a few times a week, for a year, with exercises at home. The effect is indicated by the measurements. The patient was seen again when a woman of twenty-eight and her back carefully measured, showing that the improvement gained in the year of treatment had persisted. She was in excellent health and was without noticeable deformity.

*Case with slight structural change:*

Case 2. B., twenty years of age, with slight structural curve, treated for a year by corrective gymnastics and the application of a light brace for a short time. Seen two years after the cessation of treatment, while a college student. The gain in correction from treatment remained after the cessation of treatment.

*Slight stiff curve treated by exercises:*

Case 3. N., a lady of twenty-eight, with a slightly disfiguring curve causing projection of the right hip and a slight prominence of the shoulder, with the annoyance in the fitting of the dress and the necessity of wearing a pad. This patient desired every effort to be made to bring her figure to as near a normal standard as possible. As the curve showed structural changes no expectation of benefit from treatment was entertained, but flexibility exercises were tried as an experiment and carried on with assiduity by the patient, except with such interruptions as were occasioned by summer travel. At the end of two years marked improvement was indicated by the measurements which were taken. This was so evident that it was noted by a dressmaker, who furnished her with a dress after an interval of two years, a marked change in the measurements being needed for the hip and shoulder. No padding was required, though needed two years before this, and the patient, both on inspection and measurement, showed apparent perfect equality of the hip lines; the shoulders became even, and the figure, even to a critical observer, was admirable when seen in the ordinary costume without pads. The treatment was helped by some arrangement of the corsets which were worn part of the time each day. Correction would not have been possible without the pertinacity of the patient, who devoted herself to the correction of the figure with an assiduity comparable to that of a professional dancer, or an athlete anxious to preserve agility and form. The case is of interest as showing what can be done in exceptional instances. The benefit persisted several years after the cessation of active treatment, the patient keeping up daily light home gymnastics.

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*Rigid fixed curve in an adult, temporarily benefited by correction exercises:*

Case 4. Mrs. H., forty years of age, afflicted with a severe curve with marked rotation, causing great disfigurement, and limiting comfort and activity, with pain when superimposed weight was applied. The patient for a few months submitted herself to correction treatment, chiefly with the use of a recumbent correction with a lever pressure applied two or three times a week. Marked temporary benefit was obtained, as was shown by the relief from discomfort and pain in walking. The benefit was temporary and followed each treatment. This benefit persisted for a short time after the cessation of treatment, which was not carried on for more than a few weeks. The patient was seen two or three years later and her condition of disability had not been permanently relieved.

*Correction by plaster Paris jackets:*

Case 5. W., a girl of fourteen with bad structural curve, treated for four months by corrective plaster jackets with the result indicated in the accompanying illustration. Four jackets were applied, the first with a certain amount of force. At the end of this time a leather jacket was worn for a short time and her treatment was discontinued. The patient was seen two years later and had relapsed to nearly though not into quite as bad a position as before treatment. The subsequent course of the case was not known.

*Gymnastic treatment of scoliosis:*

Case 6. W., a strong girl of fourteen, was presented with a marked lumbar curve with some structural change. The patient was treated purely by gymnastics, which were carried on for several years with care. When older, heavy gymnastics, the use of 20- and 40-lb. dumb-bells, was carried on for several months The condition of the patient, when seen three or four years later, just before marriage, showed that the back was in excellent condition, with slight projection of one hip. There had been no increase of the lumbar curve. The patient's strength and carriage was excellent, without noticeable deformity except when the bare back was examined. This case illustrates the fact that structural curves may not increase and that the back may be strengthened and a practical benefit obtained by gymnastics.

Case 7. P., a girl of twelve, rapidly growing, was treated in the same way as above, dumb-bell gymnastics being enforced and carried out for two years at home, under occasional direction, changing the exercises from time to time. The curve was a scoliotic curve with rotation, and the growth was rapid. The patient was seen four years afterwards and there had been an improvement in the figure, both in strength and contour. Her back was strong and in good condition, without noticeable deformity except when the bare back was examined.

*Curve in a growing boy improved during growth, without treatment:*

Case 8. P., a boy of twelve, growing rapidly, presented an habitual curve without evidence of structural change. As treatment was not feasible, he was told to report occasionally for examination. At the end of two years his figure by the natural process of growth and the increased strength due to growth, or athletic activity, had changed in a way so that the curve had become less noticeable and was not sufficiently serious to demand treatment.

*Cases treated by means of constant use of corrective braces:*

Case 9. B., a girl of fourteen, with marked curve, treated by means of the application and constant use of light apparatus such as is shown in the accompanying illustration. After a year's treatment improvement was noticeable, but the use of some form of pressure apparatus was continued.

Case 10. R., a child of six, with bad scoliotic curve with structural changes. Treated by means of a pressure apparatus for six months, showing at the end of that time improvement in figure. The case is still wearing apparatus, which is changed as the figure improves.

Case 11. P., badly deformed girl of eight; treated by the constant use of plaster and leather jackets for years. The deformity in this case followed some muscular distrophies of a nervous origin. Under the constant use of plaster and leather jackets for years, the patient's figure improved decidedly. Forced correction with plaster jackets was tried for a month, with the patient placed in bed, wearing a recumbent plaster correcting jacket, with improvement. The patient presents an illustration of improvement rather than cure of scoliosis.

Case 12. G., a growing boy of sixteen, healthy and strong, with a bad curve, treated by means of corrective plaster jackets and leather jackets for a year, followed by the application of a brace, with marked benefit, which persisted six months after the cessation of treatment.

These cases are sufficient to indicate that a certain amount of benefit can be obtained in almost all cases of scoliosis by treatment; that in growing children benefit can be promised by assiduous treatment, even in the marked types of deformity, such benefit being permanent.

The essentials in treatment of scoliosis can be mentioned as follows:

*First:* A careful examination of the condition of the back, not only as to the curves and contour, also to the normal rigidity and lack of strength of the back muscles.

*Second:* Where needed, the use of such exercises as will strengthen the muscles, and such flexibility exercises as will correct abnormal stiffness. These flexibility exercises must be carefully applied so as to stretch at the part of the maximum stiffness, and not increase the flexibility of the flexible portions of the spine.

*Third:* In the more severe cases the constant use of some form of pressure appliance, with the pressure applied to the convexity of the curve, and without pressure on the concavities.

*Fourth:* These cases need oversight and direction at stated intervals during a long period. That is, during the rapidly growing years such oversight and direction should be given by some one familiar with the course of affections of this class. Such patients also need the constant direction of a parent or nurse or physician who will enforce strict and persistent attention to the details of treatment, and of a family physician who will pay attention to the observance of the laws of health, diet, metabolism, etc.

*Fifth:* The affection is not to be regarded as a disease, but as a fault in growth, and for this reason care is needed for the patient during the growing years.

The combined efforts of a family physician and expert specialist are of benefit in cases with this distortion and gratifying results may be expected to reward persistent efforts.

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## ON THE ABSORPTION OF PROTEIN AND FAT IN PULMONARY TUBERCULOSIS.

BY A. E. AUSTIN, MABEL ORDWAY AND RUTH MONTAGUE, BOSTON.

COMPARATIVELY few efforts have been made to study the metabolism of phthisical patients, possibly because of the fact that before the institution of sanatoria for the treatment of this class of patients it was difficult to control the food and excretions for analysis; since the establishlishment of these sanatoria, however, these difficulties have been overcome and, furthermore, we have had an opportunity to study the effects of what may be called supernutrition, since, in the efforts to overcome the emaciation associated with this disease, a dietary containing 5,000 calories is often offered the patient in twenty-four hours. Among the earlier efforts in this direction was one by Goodbody, Bardswell and Chapman in which, while the average daily food contained 3,500 calories, in some instances it was carried to 4,187 calories, and in one instance to 5,026. Fat was unusually well utilized; in one individual, with an ingestion of 231.32 gm. of fat during twenty-four hours, 96.41% was absorbed. It was found that when a largely increased amount of fat was given a healthy individual, used as a control, the feces showed a large increase in this ingredient, but this was not true of the tuberculous. Vannini and Collina have also investigated the metabolism of three sufferers from pulmonary tuberculosis and found that when the gastro-intestinal tract was unaffected, the absorption did not differ much from that of the normal individual; there was, however, in two cases, a greater loss of nitrogenous material in the feces than is customary, but they were only using a diet containing 70 gm. of albumin and a calory content of only 1,800. The fat in the feces varied from 8.91% to 14.45% of that contained in the food, a result much inferior to that found by the previous authors, who found a loss of only 3.59%; the difference depends on the amount given, and we may conclude that with an increase in the amount of fat ingested there is apparently a less percentage of loss.

### NATURE AND PERIOD OF EXPERIMENT.

Owing to the courtesy of Dr. Dunham, three patients in the Massachusetts State Sanatorium at Rutland were placed at our disposal, and apart from some change in diet, all other features pertaining to the regimen there as to exercise, baths, etc., were observed by the patients under investigation. F. G., one of the patients in question, weighed at the beginning of the investigation 64.7 kgm. and had a temperature of 100.5°. At its close his weight was 68.07 kgm. and his temperature, 98.4°. The second, A. C., began with a weight of 67.5 kgm. and a temperature of 98.6°, and concluded with the weight of 67.6 kgm. and a temperature of 98.6°. A record of McI.'s weight and temperature was apparently not kept. All three were placed on the ordinary house diet for a period of eleven days in order to accustom the individuals to the increased food, but the portion of every article was weighed which was eaten by each individual in its cooked condition, and from the tables of Atwater its protein, fat, carbohydrate and calory value determined. The average of these eleven days was a daily amount of protein, 172.39 gm.; of fat, 176.45 gm.; of carbohydrate, 420.85 gm. and 3,774.12 calories. Then followed a period of five days when the protein was increased and all portions carefully weighed and their constituents calculated as before; during this period, the urine and feces were collected and the nitrogen of the former and the nitrogen and fat of the latter quantitatively determined; the nitrogen was determined by Kjeldahl and the fat by extraction of the dried feces with ether in a Soxhlet apparatus and the residue weighed; double estimations were always made and the average of only two fairly closely corresponding results taken. Unfortunately in the transportation of the urine from Rutland to the chemical laboratory of Tufts Medical School, more or less decomposition of the urine took place and nitrogen was lost as ammonia, so that in this respect alone the results were valueless and are omitted. The diet was now changed, and, by means of olive oil, the amount of fat given was increased without lowering the amount of nitrogen, and, after two days on this diet, a collection of urine and feces was made which were analyzed quantitatively as before for five days. During this period, in order to increase the amount of fat, olive oil was given daily in amounts from 45 to 60 gm. The patients were kept upon this diet until Feb. 25, when another period of five days was inserted during which, by the use of olive oil, cod-liver oil emulsion and butter, the fat ingested was largely increased and again the feces examined quantitatively for fat and nitrogen. During the second period, hyocholalic acid which is prepared and sold by Rufus Crowell Co. under the name of Colalin, and included in the list of new remedies by the Council of Pharmacy of the American Medical Association, was given in doses of 1½ gr. daily. Thus we have the opportunity of comparing the absorption of fat in this period of moderately increased fat consumption with slightly increased fat in the first period and excessively increased fat in the third period. v. Fuerth and Schuetz have shown that the favorable effect that the bile salts have upon the splitting of fats is due to the cholalic acid. It has also been found that 50% to 80% of the cholalic acid which enters the intestine from the bile duct is reabsorbed. Whether the hyocholalic acid, which is unlike in many respects the bovine cholalic acid, follows this law, it is difficult to say; at least in two individuals with biliary fistulæ established for the cure of cholelithiasis, no cholalic acid could be precipitated from the bile which was secreted, nor after the ingestion of hyocholalic was there any more evidence of the presence of a cholalic acid; of course it would not be safe to say that it was not present, but it must have been very largely diminished, and certainly the evidence was against the absorption of the foreign bile acid whatever may happen to the native acid. In order to present the protein, fat, carbohydrate

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and calory value of the food of these three patients during the three periods mentioned of five days each, the following table is appended:

*C.* (L. M. Annex.)

| Average per day. | Proteins. | Fats. | Carbohydrates. | Calories. |
|---|---|---|---|---|
| Period 1. Feb. 2 through Feb. 6. | 207.63 | 162.02 | 558.743 | 4632.9153 |
| Period 2. Feb. 8 through Feb. 12. | 199.16 | 192.83 | 533.58 | 4797.553 |
| Period 3. Feb. 25 through March 1. | 197.77 | 354.88 | 541.83 | 6332.744 |

*G.* (Ward E.)

| | | | | |
|---|---|---|---|---|
| Period 1. Feb. 2 through Feb. 6. | 206.76 | 160.57 | 477.58 | 4299.095 |
| Period 2. Feb. 8 through Feb. 12. | 223.00 | 214.65 | 413.6 | 4577.305 |
| Period 3. Feb. 25 through March 1. | 186.97 | 425.88 | 461.66 | 6619.067 |

*McI.* (Ward E.)

| | | | | |
|---|---|---|---|---|
| Period 1. Feb. 2 through Feb. 6. | 185.72 | 158.71 | 427.3 | 3989.385 |
| Period 2. Feb. 8 through Feb. 12. | 181.02 | 212.375 | 312.23 | 3997.412 |
| Period 3. Feb. 25 through March 1. | 159.52 | 371.2 | 276.2 | 5238.59 |

The amount of albumin to be given to a healthy individual is stated as from 1 to 5 gm. per day, and kilo and the calories as 35, based upon the same factors, so that upon this standard, calculated upon C.'s weight, the upper limit of protein feeding would be 307.5 gm., a limit reached by none of the patients during this series of experiments. The patients were allowed to satisfy their appetites as far as quantity of food went, being restricted only in the character of the food, but each article was carefully weighed, so that the amounts vary; for instance, A. C. consumed more food than his companions, but the increase consisted in the greater amount of carbohydrate of which he partook. Furthermore, while the amount of protein remains practically the same in all three periods in A. C.'s dietary, the other two compensated for the increase in fat by diminishing their protein, and McI. by taking less carbohydrate as well. In the extraction of fat from the feces no effort was made to separate the fatty acids from the neutral fats, but the mass was always made acid before the extraction, so that the fatty acids in the shape of soaps should be included. The lecithin, too, of the food, a portion of which escapes absorption, is also included, but this portion must always be small since the major part of the phosphorus which it contains is always found in the urine, showing its disintegration and absorption.

The eliminated nitrogen, too, in the feces comes from two sources, — the residue of the digestive secretions and the desquamated intestinal epithelium as well as from the unabsorbed protein of the food, but it is practically impossible to separate one from the other, so that it is usually reckoned in the nitrogen from waste food products. No attempt was made to determine the weight of the moist feces, but the entire five days' quantity was placed in a weighed evaporating dish and, with the aid of alcohol, was dried to a constant weight and then aliquot parts were taken for the separate estimations. This method has been recently criticised because there is danger of losing a portion of the volatile nitrogenous products, chiefly ammonia; this was avoided as much as possible by the addition of acid when strictly alkaline; the weighing and separation of moist feces is associated with so many difficulties, and from the unequal distribution of the water is so inaccurate, that the former method, in spite of the loss, is the more accurate. A table of the average daily elimination of fat and nitrogen in the feces for the five days is appended. As is well known, the percentage of loss of fat and protein or, rather, nitrogen, varies very largely with the character of food, its preparation and amount; taking first, for instance, the nitrogen loss in the feces, though the nitrogen comes both from the food remnants and from the intestinal secretions as well as from the desquamated epithelium, it is very difficult to separate these two factors, so that it is permissible to compare the intake with that which is eliminated. Compared in this way, it is found that the percentage of

*C.* (L. M. Annex.)

| Average per day. | Feces. | Nitrogen. | Fat. |
|---|---|---|---|
| Period 1. Feb. 2 through Feb. 6. | 19.836 | .3925 | 1.8308 |
| Period 2. Feb. 8 through Feb. 12. | 9.810 | .3606 | 2.0002 |
| Period 2. Feb. 25 through March 1. | 8.209 | .3960 | 1.6647 |

*G.* (Ward E.)

| | | | |
|---|---|---|---|
| Period 1. Feb. 2 through Feb. 6. | 34.36 | .4933 | 5.0820 |
| Period 2. Feb. 8 through Feb. 12. | 18.50 | .5469 | 3.9003 |
| Period 3. Feb. 25 through March 1. | 41.298 | 1.2612 | 5.565 |

*McI.* (Ward E.)

| | | | |
|---|---|---|---|
| Period 1. Feb. 2 through Feb. 6. | 37.960 | .6473 | 4.9217 |
| Period 2. Feb. 8 through Feb. 12. | 30.715 | 1.0316 | 6.4562 |
| Period 3. Feb. 25 through March 1. | 25.812 | .9108 | 4.8149 |

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loss is much greater when the nitrogen intake is small than when it is large; furthermore, with a diet containing a large amount of nucleo-proteids like liver and sweetbreads, the comparative nitrogen loss is much greater, and finally on the same diet Von Noorden found variations of from 4% to 10%, and the loss also might vary from time to time in the same individual. Magnus-Levy found that on a mixed diet, containing 100 gm. of protein, the loss in the feces was from 1 to 2 gm., making a loss of 6% to 10%. In the cases reported here, however, it is impossible to compare the loss with that of average protein ration for the reason stated above, and we must look for examples of increased protein feeding; such an example can be found in the experiments of Luethje and Berger on an individual convalescing from typhoid fever who ingested protein daily containing 54.6 gm. of nitrogen with a loss in the feces of 3.4 gm., or a procentual loss of 6.2%; the increase of weight of the individual during a period of seven days was 900 gm., while C. in a five days' period with 33.22 gm. of nitrogen in the daily intake of protein, and a loss of 0.392 gm., put on 659 gm. weight; the daily amount taken on by C. was 131 gm., and by the convalescent from typhoid, 127 gm. With the fat, too, there is no disappearance during fasting; during a prolonged fast Cetti eliminated 1.3 gm. of fat per day and Breithaupt, 0.57 gm. Rubner as well as Klemperer has found that if the fat be in assimilable form, like butter, olive oil or cod liver oil, a human can take 200 gm. of fat with a loss of only 2 to 3%; Landergren also found that as much as 340 gm. of fat could be taken by a human, if mixed with a little alcohol and mucilage, with a loss of only 4%. The percentage of loss of fat also follows the same law as that of protein; that is, as the amount of fat taken increases, the procentual loss becomes less and less up to a certain point which has apparently been never fully determined. It has been established that if the day's ration contain but 25 to 40 gm. of fat, the loss may be from 10 to 15%; if, however, the amount be increased to 80 to 100 gm., the loss will be only 2 to 4%. The melting point of the fat also affects its absorbtion; the fluid oils are much more absorbable than the solid fats and, what is more important, the addition of a fluid fat to a solid increases the absorption of the latter. The amount of free fatty acids tend also to increase the absorption of fat, but the suggestion of Von Mering that free oleic acid be added to fats is not absolutely necessary, since as far as is known the healthy intestine is able to hydrolize fat in unlimited quantities, nor is this power apparently lost in those chronic cases where cod liver oil is used. Even where the steapsin is diminished or lacking through disease of the pancreas, the intestinal bacteria seem able to split a large proportion of the ingested fat. It is only in forced fat feeding that the inability to split the fat would seem to be suspected, and here, where fat to the extent of 425 gm. daily in the case of G. was ingested, there appeared no great increase in the percentage of loss.

A table is here appended showing the percentage of loss in the feces of both nitrogen and fat, arranged according to the succession of periods in each patient. From this we are at first attracted by the astonishingly small percentage of loss in general both of nitrogen and fat, showing that the absorptive power of the pulmonary tuberculous not only equals that of the healthy adult, but even exceeds it. Still, an individual peculiarity can be seen particularly in the utilization of protein; C. has the best absorptive power, though taking much more protein than McI., his loss is only about one half as much. Of course we cannot say absolutely that the former has the better absorptive power until we place them both upon the same amount of protein, as we have already learned that the percentage of loss diminishes with the increased amount of daily consumption. Any changes which may occur in the absorption of the tuberculous is due to the disease *per se* and not to the accompanying temperature, for Von Noorden's patient, suffering from tuberculosis, but with no temperature, when taking 11.6 gm. of nitrogen daily in the form of albuminous food, showed a loss of 8%, and of the 85 gm. of fat taken daily, a loss of 7%. Six days later, with the same diet, but with a high temperature produced by the effect of tuberculin, the loss of nitrogen in the feces was 8.4% and of fat, 7.3%; this variation is so slight that it may be neglected. This principle is universally true, so that, as v. Hoesslin remarks, the presence of temperature in tuberculosis, if pulmonary, need not deter us from trusting the intestinal canal to elaborate and absorb these enormous quantities of food necessary to

| Period. | Nitrogen intake. | Nitrogen in feces. | Per cent nitrogen lost in feces. | Fat intake. | Fat in feces. | Per cent fat lost in feces. |
|---|---|---|---|---|---|---|
| | | | *C.* | | | |
| 1. | 33.22 | .3925 | 1.18 | 162.02 | 1.8308 | 1.13 |
| 2. | 31.865 | .3606 | 1.13 | 192.83 | 2.002 | 1.03 |
| 3. | 31.64 | .396 | 1.25 | 354.88 | 1.664 | .47 |
| | | | *G.* | | | |
| 1. | 33.081 | .4933 | 1.49 | 160.54 | 5.082 | 3.65 |
| 2. | 35.504 | .5469 | 1.53 | 214.65 | 3.9003 | 1.81 |
| 3. | 29.915 | 1.2612 | 4.21 | 425.88 | 5.1565 | 1.21 |
| | | | *McI.* | | | |
| 1. | 29.715 | .6473 | 2.17 | 158.71 | 4.9217 | 3.1 |
| 2. | 28.963 | 1.0316 | 3.56 | 212.375 | 6.4562 | 3.04 |
| 3. | 25.523 | .9108 | 3.56 | 371.2 | 4.8149 | 1.29 |

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maintain the body weight. When we take the absorption of fat into consideration, we find a slight diminution in the loss in the case of C. as well as in that of McI., while in G. the diminution is very marked; how much of this is due to the use of hyocholalic acid is difficult to say, since there is found a much more marked diminution of loss between the second and third period. Two other factors come into play here; in the first place an increased ingestion of fat, as above stated, always diminishes the procentual loss, and the increase here is very marked, being respectively 62, 211 and 159 gm. Furthermore, this increase was made up largely of olive oil, an easily digestible fat, on account of its low melting point, and this undoubtedly rendered the other fats with higher melting points, like beef and mutton tallow, to be more readily absorbed and hence in larger quantities. For instance, of stearin alone, with a melting point of 60°, there is lost in the feces 86 to 91%, but when it is given with almond oil with a melting point of 55°, there is a loss of only 10.6%. Cod liver oil, which has no inherent value in phthisis, but which must have had some basis for its long popularity, probably acts in the same way on account of its low melting point. This admirable absorption of nutriment under the regimen of the sanitarium treatment of the tuberculous, although such enormous amounts of food are given, is probably due to two reasons: First, the ration is well balanced, and it is well known that under this condition the absorption of any one form, protein, for instance, is much better when given with a corresponding quantity of fat and carbohydrate than when given alone in large quantities; secondly, the human body, provided that the intestinal tract is normal, absorbs nourishment according to its needs, much as a sponge takes up water according to the state of dryness existing within it. In only one instance was there any appreciable increase in weight, a condition only to be explained by the fact that, in spite of the great absorption, barely enough tissue building material was obtained to replace that which was destroyed by the action of the disease upon the tissues.

## A RAPID PRESUMPTIVE TEST FOR DIARRHEA CAUSED BY THE GAS BACILLUS.

BY ARTHUR I. KENDALL, PH.D., AND RICHARD M. SMITH, M.D., BOSTON.

*(From the Boston Floating Hospital and the Department of Preventive Medicine and Hygiene, Harvard Medical School.)*

Diarrhea in infants may arise from a variety of causes. Micro-organisms play a part in the production of diarrhea in many cases. The action of the dysentery bacillus in this connection is well known. It has been definitely shown by other observers that the gas bacillus also, or B. Welchii as it is more properly named, may be the causative factor in some cases of diarrhea. There has been no simple method applied, however, to the detection of this organism in the stools of suspected cases, and it has, therefore, been difficult and almost impossible for clinicians to arrive at a definite diagnosis. This difficulty of diagnosis is further complicated by the fact that certain cases in which the past history is uncertain, present, at the time of examination, stools characteristic of bacillary dysentery, i. e., they contain blood, pus and mucus.

In order to throw light upon the distribution of the gas bacillus in the stools of children with diarrheal diseases, we have utilized the abundant material upon the Boston Floating Hospital. The method employed in detecting the gas bacillus is simple, rapid and certain.

The method consists essentially in inoculating sterile tubes of whole milk with a small portion of the suspected stool, thoroughly emulsified in it, and immersed in a water bath to above the level of the top of the milk and heated to 80° C. for twenty minutes, incubating at body temperature for eighteen to twenty-four hours. As an alternative procedure, the infected milk tube may be gradually brought to the boiling point of water in a water bath, kept there for three minutes, then incubated as above. By so doing, all bacteria not in the spore state are killed, and the development of the spores into vegetative cells is unrestricted by the presence of non-spore-forming organisms. Those cultures containing gas bacilli present at the end of the period of incubation three prominent features: (*a*) The casein is largely dissolved (usually at least 80%); (*b*) the residual casein is slightly pink in color, and filled with holes, the result of the stormy fermentation; (*c*) the culture smells strongly of rancid butter, due to the formation by the gas bacillus of butyric acid. Gram-stained preparations made from such growths show rather thick, short bacilli with slightly rounded ends. Controls suitably studied culturally have shown that cultures presenting this complex are in reality gas bacilli.

Very frequently "pseudo-reactions" occur; there is, as above, a decided liquefaction of the casein, but the shotted appearance of the residual casein is absent, and there is no odor of butyric acid. These growths have been found to contain *B. subtilis*, or members of the subtilis group, and are not to be regarded as even suggestive of B. Welchii.

We have examined by this method the stools from 231 infants presenting a variety of intestinal disturbances and a few other diseased conditions. It was possible to isolate the gas bacillus from 22 cases. Six of these cases had apparently normal stools; 2 had thin watery stools with a few curds and a little mucus; the remaining 14 showed blood and mucus and many of them pus in the stools. The clinical diagnosis of these 14 cases was uncertain, but suggested bacillary dysentery.

It was not possible in any case in which the gas bacillus was recovered from the stools to isolate simultaneously the dysentery bacillus. It would appear from these cases, and from bacteriological studies upon dysentery cases, to be reported later, that the conditions favoring the development of the gas bacillus in the intestinal tract are unsuitable for the growth of the dysentery bacillus.

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The gas bacillus is present in small numbers in the stools of some older bottle-fed babies which are apparently in perfect health, and this might at first sight be construed as an argument against the specificity of the organism in cases of diarrhea. It will be found, however, that this inconsistency is more apparent than real, for it is well known that other pathogenic organisms, e. g., the pneumococcus, may exist as apparently harmless saprophytes in the body. Those cases in which we regard the presence of the gas bacillus as significant and as the etiological factor of the disease give a history of diarrhea of greater or lesser severity, and usually of rather long standing, so that the intestinal tract has had ample opportunity to rid itself of the majority of its bacterial flora. The fact that the gas bacillus finds a suitable environment for its rapid proliferation in a certain number of these cases lends additional evidence to the etiological relationship of the organism.

The diagnosis of diarrhea due to an infection with the gas bacillus can be made by the means described above within twenty-four hours, at the end of which time it is possible to begin treatment with a definite idea as to the etiology of the condition. The management of all acute diarrheas during this period of twenty-four hours while the cultures are developing and while the diagnosis is being made is practically the same, namely, purging and starvation.

Thus far the application of the method as outlined above and the subsequent treatment with buttermilk has been limited to relatively few cases, but the results obtained have been uniformly satisfactory and would seem to justify the belief that the gas bacillus is the etiological factor in a small group of the acute diarrheas in infants.

## Clinical Department.

### TWO CASES OF COMMON SPEECH AND VOICE DEFECT AND THEIR TREATMENT.

BY ABRAHAM MYERSON, M.D., BOSTON.

Medical literature so often concerns itself with rare conditions and difficult therapeutic problems that one feels like apologizing for reporting cases that are common and whose treatment is along well-known principles. The only excuse the writer has for taking up space with the two following cases is that they represent conditions that on the whole are neglected by the medical profession of America. Speech and voice defects have an importance to the patients suffering from them that gives dignity to their consideration, and they are so frequently associated with nervous disorder as to make a proper working field for neurologists. A profession that claims the whole range of human pathology as its field cannot consistently neglect conditions of this kind. Our duties as physicians so often end with naming the ill we cannot cure that we ought pay particular attention to those diseases in which patient effort is rewarded with brilliant success.

The first case is that of a young woman of twenty-eight, referred to the writer by Dr. E. A. Crockett. The patient has a good family history, was born at full term and in a normal manner. Aside from the matter of speech, her development, including the time of teeth eruption, walking, dextrous use of hands, learning of cleanly habits, was normal. She learned to speak at the usual time, but, as related by her mother, never talked plainly, a defect which became more marked as she grew older. However, she did not seem mentally deficient, for she went through grammar school without trouble and was in every way decent and well behaved.

Examination showed that ears, nose and throat are normal. Intelligence is up to the average of servant girls, that being her occupation, and she can spell and write very well, in fact, better than the average. In other words, she is neither deaf nor feeble-minded, the usual causes of defective speech, and one can only account for her unintelligible speech by stating that some acute illness which came and went unnoticed left a defect which was neglected, grew worse with the years, and mal-directed her whole life.

Unintelligible is a short description of her speech. Its three main defects arose from her consciousness of inferiority, and represent compromises between her need of speech and her wish to avoid it. First of all she spoke in what was almost a whisper, so that, for example, there was little difference between such sonants as *b*, *d*, and the correspondng surds, *p*, *t*. Secondly, she used only the tip of her tongue, her teeth and lips, in speech, so that sounds like *l*, *r*, *k*, *g*, *ch*, etc., were entirely missing, and *t*, *p* and *b* obtruded themselves continually. Third, she opened her mouth as little as possible, and so there was a disagreeable nasal tone to her voice.

The treatment was and still is re-education. She has been under the writer's care for four months, appearing on an average of once a week, which, of course, is utterly inadequate for quick results. Nevertheless, her progress has been satisfactory, for while some sounds, notably *ch* and consonant *j*, are still very difficult, she can use all the others sufficiently well to frame an ordinary conversation. There is no doubt that in time she will not be markedly different from her neighbors so far as speech is concerned.

The details of her speech training are not interesting, representing as they do the utilization of well-known principles. Perhaps it is of value to state that the writer has found it much easier and more expedient to place instrumentally tongue, lips, teeth, etc., in the places proper to any sound than to show where to place them by diagram or by looking-glass. In other words, the motor memories are more valuable than the visual as the basis for learning the reproduction of speech sounds, while the fact that such defects as these arise in a community of normally speaking people proves that auditory memories, the usual basis of speech, are by no means the best to utilize in re-education.

What is here necessary to emphasize is this: that the chances of "outgrowing" speech defects, the usual consolation offered to parents of such children, are few as against the chances that the trouble will get markedly worse. And where so socially important a function is concerned, where defect

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means occupying an isolated and inferior position throughout life, with its accompanying distress, there is a moral issue involved in such advice as well as one purely medical.

The subject of re-education, as well as phonetics in general, is well covered in the writings of A. Graham Bell,[1] E. W. Scripture,[2] H. Gutzmann,[3] and particularly in the French[4] and German[5] periodicals which concern themselves almost entirely with speech.

The second case, one of partial aphonia, concerns a lady of fifty, a well bred, cultured woman of wealth and high social standing. Her occupation, the dispensing and directing of charity, compelled her to speak a good deal, but is only in part responsible for her trouble. About ten years ago she commenced to suffer from "sore throats" and hoarseness, which at first appearing only in the winter, finally came in the summer as well. Routine laryngological measures directed to nose, pharynx and larynx were of no avail, and finally her voice became very weak and practically devoid of laryngeal tone, — in other words, aphonic.

The examination disclosed no abnormalities beyond the following:

1. A very slight imperfection in the adduction of the chords, the larynx being otherwise normal.
2. On phonation, the shoulders were raised and the upper chest and neck muscles became rigid, meaning that expiration became spastic.
3. Writer's cramp of the right hand, of a flaccid type, and so marked that the typewriter was her usual means of correspondence.

The treatment was directed toward establishing correct habit of managing the column of air necessary for phonation. On the theory that the defect involved the whole of the respiratory act during speaking, she was directed to make her breathing of the type known as lower costal and to lengthen the expiration while practicing graduated vocal exercises. With the looking-glass as her guide, she learned to speak without drawing up her shoulders and with the upper chest relaxed. The result of a month's persistent training was that she was enabled to pass the following winter without a cold, and she could speak freely and with ease, although her voice remained low, but not aphonic.

The literature regarding such cases dates back for many years, and there are some writers whose opinions are of interest and value. That the laryngeal condition is an effect and not a cause was emphasized by Piorry[6] as far back as 1822, but even to-day laryngological treatment is mainly directed to the local condition, without regard for the fact that "function can undermine itself and its organ," as Meyer[7] puts it. Since Piorry's time many eminent laryngologists have considered the condition carefully both as regards its etiology and treatment. Thus Holbrook Curtis[8] regards it as resulting from the wrong management of the column of air, of a vicious and "upper chest" type of respiration. Lenox Browne,[9] and his co-worker in voice culture, Behnke, agree with this, but differ in regard to the therapeutics. They hold that diaphragmatic breathing is the only proper kind for all vocal effort, while Curtis believes that lower chest respiration is better, as being more amenable to the will, and states that most great singers breathe in this way while singing. Gutzmann,[10] who regards the trouble as spastic, and whom the writer[11] has quoted elsewhere, agrees with Curtis, quoting Sewall and Pollard[12] as having conducted experiments to prove this. As a matter of fact, these laboratory workers prove as much for one side as for the other, since they show that diaphragmatic treatment is more favorable to air mixture and high tone production than is costal respiration, while this latter brings more air into the lungs and is better for low tones. Olivier,[13] in a fine comprehensive article, lays the trouble to insufficient inspiration and, therefore, directs his attention towards increasing the breathing capacity of his patients.

The noted laryngologist B. Fraenkel[14] declared that these patients were suffering from a laryngeal condition allied to writer's cramp for which he proposed the names "mogiphonia" or "phonasthenia." He stated that there were spastic, paretic and tremulous types of writer's cramp and similar types of this laryngeal trouble. As in the hand affection, he regarded as the etiological factors the excessive use of the part in a neuropathic individual; in other words, bringing it into what is nowadays classed as the "occupation neuroses."[15] On the whole he considered that the prognosis of these cases was unfavorable.

As a matter of fact, excessive use of the voice will bring about aphonia in any individual. Such cases are simple; they are not neuroses, but are states of chronic fatigue of a part. But in the case here reported, and in many others, there is no such history, for her troubles came on without real excessive speaking or singing. Nor do people as a whole have to learn to speak correctly, for while almost every untrained person has defective control and tone, he uses his respiratory apparatus in a manner which training only perfects. But the person who is intense in all that he or she does, who is exceedingly earnest, brings about an excessive innervation of the part he is to use. This excess brings about muscle spasticity; this spasticity brings on quick fatigue, which in its turn, when long continued, brings about loss of function. Thus ordinary people, not "neuropathic," when engaged in heated argument, speak in high-pitched voices, and examination will show that the upper chest is engaged in squeezing out the sounds, while the shoulders are raised and the abdomen is hard and tense. And the type above referred to not only constantly speaks tensely, but shakes your hand excessively, "goes into everything," as we say, with great zeal, and a use of musculature that is almost always spastic.

So at least a certain proportion of functional aphonia, greater than most laryngologists recognize, is due to misuse of the entire speech apparatus and not to changes in the larynx. It is necessary to emphasize the fact that the entire apparatus is misused in these abnormal speech efforts, just as it is normally used in its entirety in normal speech effort. Diaphragm, chest and larynx are all involved in the spasticity, — but the larynx suffers most. Moreover, inflammatory and other organic changes in throat and larynx which are associated with pain and hoarseness are often not the causes of the changed functioning of the parts involved, but with the pain and

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hoarseness are symptoms of the wrong use of the parts. Medical science is adding to the cellular interpretation of disease, the physiological or dynamic interpretation, and therapeutics can most profitably apply the lessons of pathology. The method of using any part that is normally operated by the will can be changed if it be a a wrong method to a correct one, at least in most cases. With that change will come a readjustment more or less complete of the parts to the normal. This is as true in laryngology as in orthopedics, and its recognition has an important bearing on the therapeutics of the future.

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# Medical Progress.

## REPORT ON DERMATOLOGY.

BY JOHN T. BOWEN, M.D., AND HARVEY P. TOWLE, M.D.

1. Ecthyma Térébrant de l'Enfance.
2. Purpura Hemorrhagica Due to Benzol Poisoning.
3. Grain Itch.

### ECTHYMA TÉRÉBRANT DE L'ENFANCE.

Welander[1] describes in an interesting fashion the case of a child of three who was admitted to the hospital suffering from peculiar ulcerations of the scalp, right hand and the buttocks. The history was that the first appearance was that of a pustule near the right thumb nail, from which an ulcer quickly developed. Two weeks later ulcers appeared, also near the anus and on the buttocks, as well as on the scalp. They extended, especially those upon the scalp, while new ones appeared in the vicinity. The ulcers were covered more or less with yellowish-brown crusts. Two months after the first appearances the child was admitted to the hospital.

When admitted the scalp presented a number of large and small ulcers partially covered with a crust. Some of these ulcers showed by their contours that they had arisen from the confluence of several smaller ulcers. Most of these ulcers were sharply defined, as if punched out. Small flat vesicles were to be seen in the vicinity of these ulcers. Similar ulcers were seen upon the right thumb, which had coalesced to practically one ulcerated surface, which extended to the back of the hand. On the buttocks and the lower part of the back similar ulcers were seen, not so sharply defined as those upon the head. The child's condition was very bad, with a rise of temperature.

[1] Welander, Stockholm: Arch. für Dermat. und Syph., xcix Band, 3. heft.

Soon after the child's entrance, staphylococci were found in the vesicles of the head with partially pustular contents. The Von Pirquet reaction was positive, the Wassermann reaction negative. No reaction from the injection of tuberculin.

In the further course of the affection it was shown that the first appearances were semi-transparent vesicles which extended peripherally, became necrotic and changed into flat ulcers with sharp edges, which quickly extended both in depth and peripherally.

Under applications of cyanide of mercury the ulcers gradually healed and the child made a good recovery.

The writer confesses that it would have been very difficult to make the diagnosis from the ulcers on the head alone had there not been present those of the buttocks which corresponded completely with the pictures of *ecthyma térébrant de l'enfance*. The evolution of the ulcers enables one to exclude tuberculosis as their cause. That the child also had tuberculosis was proved by the positive results of the Von Pirquet test, and later enlarged glands and a tubercular affection of the joint developed. The child's tuberculosis was said to have only an indirect action on these ulcers by lowering the child's power of resistance toward the action of the pathogenic bacteria which were the cause of the affection. This affection has been usually found upon the buttocks, although others than Welander have described its occurrence on other places.

It is clear that this affection is caused by some form of micro-organism. In some cases streptococci have been found; in others, the bacillus pyocyaneus. In Welander's case no positive result was obtained from the bacteriological investigations. Staphylococci were found in the vesicles. Streptococci were never found in an early stage. Once small short rods were found in the cultures made from the vesicles. On the whole the writer is inclined to believe that the staphylococci were the cause of the affection in his case. Certainly neither streptococci nor the bacillus pyocyaneus could be regarded as causative.

Whatever may have been the form of micro-organism that caused the affection, it can be confidently maintained that it began as a local lesion with infection from without, and that the pathogenic micro-organisms were carried from one place to another, causing the new infections. Absorption from the toxic agents caused the constitutional disturbance and the rise of temperature.

In conclusion, the writer asserts that the cyanide of mercury is much preferable in such skin affections to corrosive sublimate, in that its action is effective without having the strongly irritating properties of sublimate.

### PURPURA HEMORRHAGICA DUE TO BENZOL POISONING.

In a preliminary report Selling[2] relates a number of cases of purpura hemorrhagica which occurred

[2] L. Selling: Johns Hopkins Hosp. Bull., Febuary, 1910.

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at a factory in the suburbs of Baltimore engaged in the manufacture of tin cans. From the mode of occurrence, and from the results of experimental work, it is probable that they belong to the group of toxic purpuras.

The factory employed about three hundred and twenty-five people, and was divided into several departments. The cases were all confined to one department, and, indeed, to one room in this department, the so-called "coating room." In this room a substitute for solder was used which was a mixture composed of rubber, a rosin and a coloring matter dissolved in commercial benzol. The cases occurred among fourteen girls between the ages of fourteen and sixteen, who worked at the coating machines. After the can covers had been coated about the margin with the mixture which has been described, they were piled in trays and allowed to dry by the evaporation of the benzol. Ten gallons of benzol a day were evaporated in this room. There was a well-marked odor of benzol in spite of good ventilation and open windows throughout the room.

Three cases are then described, two of which were fatal. The symptoms were quite similar in all cases. The first appearances were those of a purpuric eruption, followed soon after by hemorrhages from the nose and mouth. In one case there was a very severe hemorrhage from the throat, which was with difficulty controlled by local applications. The patients who died gradually lapsed into a toxic condition for some time before death.

In the case of the patient who recovered there were marked gastric symptoms and the purpuric eruption was much less extensive than in the other cases. The condition of the blood in these cases has been described as the picture of aplastic anemia. There were only slight changes in the appearance of the red blood cells; there was an absence of regenerative forms, quantities of platelets and a diminution of the granular types of white blood cells, with a relative increase in the mononuclear elements.

A series of cases quite similar to these was reported from Stockholm in 1897, which occurred at a factory engaged in making bicycle tires and where benzol was used as a solvent for the rubber. Experiments made by Santesson, who described this epidemic, demonstrated that hemorrhages into the internal organs could be produced by wrapping the bodies of rabbits in cloths soaked with benzol and chemically pure benzene, as well as by subcutaneous injection.

Some other experiments were made by Selling by injecting fractional distillations of the mixture into rabbits, with the result that a great diminution in the white blood cells with the outpouring of a large number of abnormal forms occurred.

### GRAIN ITCH.

Schamberg[3] publishes an interesting article on this subject based on a number of cases observed in Philadelphia. He first observed the affection in epidemic form in the spring of 1901, and it was then described under the title, "An Epidemic of a Peculiar and Unfamiliar Disease of the Skin." The cause of this disease was at that time obscure.

In the spring and summer of 1909 this same affection became very prevalent in and about Philadelphia. The discovery of its cause was due to an outbreak that occurred among twenty sailors on a private yacht in the Delaware River. Dr. Goldberger was detailed by the United States Public Health and Marine-Hospital Service to investigate the matter, and Dr. Schamberg and he continued the investigation together.

After examining the twenty sailors who had been sent to the hospital, they then turned their attention to the yacht and found that a number of new straw mattresses had been received and that the disease was confined to those who had slept on these mattresses or who had put their clothes on them. Eleven people on board the ship who had not slept on the new straw mattresses had not acquired the disease.

At the same time it was found that there was a similar affection among the sailors of four other boats in the vicinity, and it was found on examination that these boats had also obtained new straw mattresses. Many other cases were also investigated in different parts of Philadelphia, in which the affection could be traced in the same way to a new mattress.

It was found that all of the manufacturers who had furnished these straw mattresses had obtained their wheat straw from a dealer in southern New Jersey.

Schamberg and Goldberger then made a careful examination of the straw and were able to detect the presence of a mite of very minute size. This was declared by Mr. Banks, of the Bureau of Entomology, to be very close to, if not identical with, the pediculoides ventricosus.

It was proved that this was the cause of the affection by the production of characteristic lesions upon people who voluntarily slept on the mattresses for experimental purposes. Portions of the straw were also applied to the skin of volunteers and resulted in producing the same lesions.

The characteristic appearance is that of wheals which have a central small vesicle. The vesicle soon becomes a pustule. There are also two other types described as the varicelloid, with a large central vesicle or pustule, and the erythema multiforme type.

The eruption is usually profuse, involving the neck, chest, abdomen and back, and to a less extent the arms and legs. The trunk is the part most affected. The hands and feet are usually free.

The eruption is usually accompanied by intense itching, which is worse at night and leads naturally to violent scratching and resulting excoriations.

At first there may be some slight constitutional symptoms and at times a moderate enlargement of the lymphatic glands.

Examination of the blood showed:

(1) That there was in most cases a moderate leucocytosis during the acme of the disease.

[3] Schamberg: Jour. Cutan. Dis., Febuary, 1910.

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(2) That the eosinophilia was well marked at the height of the affection.

(3) Both the leucocytosis and eosinophilia subsided with improvement of the symptoms.

(4) That the other leucocytic elements showed no particular changes.

The histological changes are essentially those of an urticarial lesion.

It is comparatively easy to get rid of the parasite. Schamberg uses an ointment of beta-naphthol and sulphur. The clothing should be disinfected by boiling or fumigation. In the case of the mattresses they may be freed of the mites by exposure in a closed chamber to steam and sulphur fumes or formaldehyde.

Ordinarily the itching will cease within twelve to thirty-six hours, and the eruption disappear in a week or ten days. From his observation Schamberg believes that the affection dies out of itself after a time.

The writer found upon looking into the matter that an affection probably of the same nature has prevailed from time to time in different sections of the United States. A series of cases published in England last year under the title "Barley Itch" may possibly belong in this category; also a study of the literature reveals many instances of cutaneous affections occurring in people who had come in contact with some sort of grain that were very probably due to this mite. As far back as 1829 "Fessenden's New England Farmer" published a communication regarding a disease of barley straw which was produced by the puncture of insects.

The pediculoides ventricosus is parasitic upon the larvæ of soft-bodied insects, and it is of importance from the fact that it is hostile to the grain insects, and, therefore, favorable to the preservation of the grain. It was also found that straw used for packing purposes and sacks of wheat and barley and other grains constitute additional sources of infection.

## Reports of Societies.

### AMERICAN SURGICAL ASSOCIATION.

Meeting at Washington, D. C., May 3, 4, 5, 1910.

#### OPERATIVE TREATMENT OF TUMORS OF THE HYPOPHYSIS.

A. E. Halstead, M.D., of Chicago: A survey of the literature on the operative treatment of tumors of the hypophysis discloses the fact that many of the procedures proposed are based not on clinical experience, but on observations made in the post-mortem room; therefore, the merits of these methods are still unproved. The routes of approach previously advocated have been the intracranial and the extracranial. Halstead proposes what he terms the oro-nasal route, which he employed successfully in one case. It is a modification of the infranasal method of approach, but is without the trauma and disfiguration which must follow the Koenig operation.

Halstead presented a patient showing the extremely good result obtained by this method of procedure. He also reported a fatal case.

#### DISCUSSION.

Dr. S. J. Mixter, of Boston: I wish to present a case operated on by the route suggested by Kanavel. There was a large cyst in the hypophysis filled with cholesterin and holding about 1½ to 2 oz. of fluid. Patient made a good recovery after the operation and his vision, which before was extremely poor, has been much benefited.

Dr. Harvey Cushing, of Baltimore: The various means of approach to the hypophysis do not make so much difference as does the matter of dealing with the structure when it is brought into view. The growth often becomes malignant, as is true of long-standing trouble with the thyroid, and it is conceivable that it cannot be entirely removed. In fatal cases it has often been found that only a mere fragment of the growth has been taken away. The operation in the first place has for its object the relief of pressure; these symptoms can be combatted by the mere removal of the lower part of the sella turcica and the splitting of the capsule of the gland. Whether many of these adenomas are merely hypertrophies of the gland, comparable to various diseased changes in the thyroid, we do not know, but if so, partial removal is indicated.

Dr. A. B. Kanavel, of Chicago: Concerning the technical procedure in Dr. Halstead's cases, in the first one particularly, the view could not have been better. The operation was very quickly done, the anterior wall of the sphenoidal sinus quickly removed and the bulging sella turcica opened, and a tumor protruding into the sinus was removed without difficulty. In the second case the sella turcica did not bulge into the sinus; it was seen with more difficulty and was arrived at by anatomical deductions. In two cases there was considerable hemorrhage, and I would suggest the elevation of the head during the operation. In the majority of cases it will only be necessary within the nose to remove the vomer and the anterior portion of the sphenoid in order to come down on the sella turcica.

Dr. Dean Lewis, of Chicago: The tissue removed from the first case contains no elements which are ordinarily found in the anterior lobe or the pars intermedia. The tumor is composed of stratified epithelium with a papillary arrangement. The lower cells rest upon the stroma of the papillæ and are cylindrical, while the cells of the succeeding layers differ in shape, the differences apparently being due to variations in pressure. As the cells of the anterior lobe and the pars intermedia are not reproduced in this growth, we must assume that the tumor has probably developed from an epithelial inclusion, which has not gone on to complete differentiation. The growth corresponds histologically to a group of tumors which occur about the infundibulum and extend down to the sella and up to the third ventricle.

The tissue removed from a second case came from the anterior lobe. In some sections the cell columns are cut parallel, long rows of cells resting between rather thick connective tissue trabeculæ. In other fields the cell columns are larger than normal, the connective tissue between the different columns having broken down, thus permitting of fusion. In still other fields the fusion has become so marked that large groups of cells are found, hyperplasia apparently having ended in adenoma formation. Karyokinetic figures may be seen in a number of different fields.

It is important to recognize the complex structure of the hypophysis in making the anatomic diagnosis of tumors of this gland, and to remember that the cells of the anterior lobe, when growing rapidly, tend to

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reproduce the structure of a sarcoma. Stains which differentiate granules should, therefore, be used in the study of all growths apparently originating in the hypophysis.

BENIGN BONE CYSTS, OSTITIS FIBROSA, GIANT-CELL SARCOMA AND BONE ANEURYSM OF THE LONG PIPE BONES. A CLINICAL AND PATHOLOGICAL STUDY, WITH THE CONCLUSION THAT CONSERVATIVE TREATMENT IS JUSTIFIABLE.

Joseph C. Bloogdood, M.D., of Baltimore, Md.: In many lesions technic is ahead of diagnosis.

The development of technic is more rapid, because the results of faulty technic are immediate, while the development of diagnosis is more difficult, especially in tumors, because the results are more remote.

Treatment of tumors which will assure the patient the greatest possibility of a permanent cure with the least mutilation will only be accomplished when surgeons have a better conception of the local growth of neoplasms, both benign and malignant. This is especially true of the three lesions of the long pipe bones which I wish to present in this contribution.

The so-called benign bone cyst may present itself in five forms: First, as a medullary cyst without any definite gross lining; second, as a similar cyst with a definite connective tissue lining which is easily stripped from the bony capsule; third, as a medullary mass of fibrous tissue with a small cyst; fourth, as the same medullary mass of fibrous tissue without any cyst formation; and, fifth, as multiple medullary cysts.

Among 89 cases, of which 20 were personally observed, 69 belong to the variety of true localized bone cyst or ostitis fibrosa. The other 20 cysts have different etiological factors, for example, cysts in enchondroma, in pure myxoma, in giant-cell sarcoma, in ostitis deformans; cysts due to subperiosteal ossifying hematoma, and callous cysts.

The true benign bone cysts are pathologically identical. In the cases with no definite lining there is found under the microscope between the bone lamellæ of the bony shell the same connective tissue seen in the gross in the other four types. This connective tissue has a definite histological appearance which has been, but should not be, mistaken for spindle-cell sarcoma. In a certain number of cases areas of giant cells are found, but they should not be interpreted as giant-cell sarcoma. Also, one will find, in the gross and with the microscope, islands of cartilage.

At the exploratory incision there is always a thin shell of bone; the contents of the cyst is usually of a dark-brown color and thin; it has never been distinctly hemorrhagic with large blood clots as the contents of the so-called bone aneurysm. The character of the fluid and the gross appearance of the fibrous tissue should allow one to differentiate this lesion, whether it appears as a cyst or a completely solid area. This lesion has been and can be cured by simple incision and curetting. It is distinctly benign, and from an experience over many years with sixty-nine cases it has shown no tendency to malignancy.

The giant-cell sarcoma, of which I have studied personally nineteen cases, can also be recognized at the exploratory incision. The medullary cavity is filled with a soft, hemorrhagic tissue resembling granulation tissue mixed with whitish areas which, when removed with the curette, come away in masses of irregular shape. This tumor also has been cured by curetting. It is eight years since I curetted from the medullary cavity of the upper end of the tibia such a tumor, and this patient has no evidence of recurrence to-day. Among my personally studied cases, and in the literature, I have so far been unable to find metastasis from a giant-cell sarcoma. Cases have been cured even after repeated curetting; amputation is only indicated when the patient has allowed the tumor to grow to such a size that it has perforated the bone capsule and infiltrated the soft parts to such an extent that its complete removal would leave a functionless limb. Even in such cases I believe it will be justifiable to first attempt curetting, use the Paquelin cautery, followed by x-ray treatment. But such extensive cases are unusual. The point that I wish to emphasize is that giant-cell sarcoma can and should be recognized at the exploratory incision, and in the majority of cases an attempt should be made to cure the disease with the curette.

The so-called bone aneurysm is a much less frequent tumor. It is distinctly malignant. It is a hematoma due to hemorrhage in the most malignant form of medullary spindle, round or mixed-cell sarcoma, and I am of the opinion that in this stage of this tumor metastasis has already taken place, so that no harm could come from mistaking such a tumor for a bone cyst or giant-cell sarcoma. I have seen 3 cases. In 2 the diagnosis was not difficult, one patient was not saved by the highest amputation; in the second case amputation was refused; the third case was first treated as bone cyst; amputation was done later, but the patient died of metastasis.

DISCUSSION.

Dr. Rudolph Matas, of New Orleans: I would call attention to a case in which, after removal of a giant-cell sarcoma from the humerus, there was such a large cavity that I used about 1½ oz. of mosetic cement, and the patient later developed extreme symptoms of iodoform poisoning, as was but natural from the large amount of the cement used. In ten days, however, he recovered from its effects and the arm healed with a perfect contour of the bone. I believe that in Beck's paste we have a most valuable means of filling up cavities, it being superior in my mind to any other paste.

Dr. William L. Rodman, of Philadelphia: I recall a case operated upon in 1889 for large giant-cell sarcoma of the lower jaw by free chiselling and curettement, but without removal of the maxilla. The patient lived for more than ten years after this operation, and may be alive to-day.

Dr. Joseph A. Blake, of New York: I had a case of sarcoma of the bone, the fourth finger of the patient being diseased. A simple operation in this case proved most satisfactory, and now, three years since operation, there is a normal phalanx.

Dr. Harry M. Sherman, of San Francisco: I would say that in my experience salt solution poured into these cavities a little in excess just before the last stitches are taken is as good as any other material for filling; it is replaced by blood and obviates the necessity of putting in any foreign body such as iodoform or bismuth.

Dr. Dudley P. Allen, of Cleveland: Some years ago I removed the lower jaw of a patient for giant-cell sarcoma, leaving but a small portion of the substance of the jaw. I used a splint to hold the teeth in place. The patient recovered entirely and is now well.

Dr. William S. Halsted, of Baltimore: I am reminded of a patient with a myxoma of the humerus; although the disease involved the bone from one end to the other, there was no cyst and no fibrous tissue. The bone was excised excepting for a strip posteriorly and at the lower end, and the entire cavity carefully swabbed out with carbolic acid. The patient made a good recovery and had a strong humerus, but there were implantation recurrences in the soft parts on two occasions. It has now been four years since the first operation, and the patient at present is perfectly well.

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Dr. Nathan Jacobson, of Syracuse: In reference to giant-cell sarcoma of the jaw, I recall one case still living in whom I did a partial excision of the upper jaw for giant-cell sarcoma about twenty-five years ago. There was never any recurrence. In my experience in those cases of giant-cell sarcoma where there is reasonable cleaning out, there is seldom a recurrence of the growth.

Prof. A. von Eiselsberg, of Vienna: In such cases as these mentioned by the reader of this paper we are in the habit, before finishing the operation, of pouring boiling water into the wound in order to destroy all the germs, and have found it a most satisfactory method.

Dr. Joseph C. Bloodgood, of Baltimore (in closing): Dr. Halsted's case of exostosis with involvement of the humerus brings out the point that pure myxoma is a benign tumor, that recurrence after operation may be due not so much to leaving a portion of the tumor growth behind as to infecting the wound in removal of the tumor. In such cases it would be well to use boiling water, pure carbolic or Paquelin's cautery to disinfect the wound.

### DIAGNOSIS AND SURGICAL TREATMENT OF ESOPHAGEAL DIVERTICULA.

Charles H. Mayo, A.M., M.D., of Rochester, Minn.: Diverticula of the esophagus, described by Rokitansky in 1840 and classified as *pressure* or *pulsion* sacs, and traction sacs. Most cases are pharyngo-esophageal, determined by the origin of the diverticulum.

The condition is confined to adults. Dysphagia is the most common symptom; cough and dyspnea are common. Distended sacs are often visible in the neck, and can be emptied by pressure. Condition is disclosed by probing and by radiograph of bismuth-distended sac.

H. S. Plummer's method of diagnosis is a combination of the technic of Mixter and Dunham, as used in stricture. The patient swallows a silk thread which passes into the intestine. The Plummer perforated acorn probe passed on the thread gives depth of pocket and location of its neck. By alternating the tension of the thread, elevating the probe to the distal opening of the esophagus, a pocket and its depth can be ascertained and tubes passed for feeding. Gastrostomy for temporary feeding may be necessary.

Operation is as follows: Lateral oblique incision; blunt dissection; exposure of sac and excision; closure by suture; rubber tissue drain.

There have been 8 cases in the Rochester clinic; 6 operated upon successfully and 2 which were not operated upon.

### REMOVAL OF A TACK FROM THE LEFT BRONCHUS.

N. B. Carson, M.D., of St. Louis, Mo.: Annie Y., aged four, came to my service in the St. Louis Mullanphy Hospital Jan. 18, 1909. All that could be learned was that a month before entering the hospital she was supposed to have swallowed an upholsterer's tack, which was followed by a severe spell of coughing, and later by a very serious illness. Physical examination showed the child to be very pale, anemic, emaciated and weak. She swallowed either liquids or solids with difficulty, and coughed almost constantly, with an expectoration of white mucus, and the coughing was accompanied by a very severe pain on the left side of the sternum. The left lung was dull in the middle portion, while the upper and lower portions were more or less resonant.

A skiagraph of the chest showed the tack in the median line with the head down, and the point upwards, the point being lodged in front of the body of the fifth dorsal vertebra. Examination of the sputum was negative, as was also Von Pirquet's test.

On Jan. 27 tracheotomy was done, and an attempt made by means of the bronchoscope to remove the tack, which failed. On Jan. 29 a skiagraph located the tack about the beginning of the left bronchus. Jan. 30, under rectal anesthesia, a section of about an inch of the seventh rib on the posterior axillary line was removed, and an opening made into a small abscess cavity in the lung, which discharged about an ounce of yellowish pus. At the same time the bronchoscope was reintroduced into the tracheal opening, and the left bronchus was found to be entirely closed. On account of the inability to get permission to operate sooner, nothing was done until the 27th of July, when an opening was made in the chest over the sixth rib and about three inches of the rib removed, and the pleural cavity opened. The lung was entirely solidified, and upon exploring the left bronchus at its entrance into the base of the lung an abscess cavity was located which when opened discharged about a dram of fetid pus: The tack was found in this abscess cavity and removed.

At 7.30 of the same evening there was a twitching of the left side of the face, arm and hand, which was followed by a partial hemiplegia. After this the patient improved steadily until the evening of Aug. 2, when there was a gush of blood from the nose and mouth which was speedily followed by death. Post-mortem showed that there had been an extensive inflammation involving the entire lung and the pleura of that side. Between the left bronchus and the pulmonary artery was an abscess cavity in which the tack had been lodged after it had forced its way through the bronchus. A small opening was found in the pulmonary artery as a result of the erosion caused by the head of the tack.

### DISCUSSION.

Dr. Samuel J. Mixter, of Boston: I have operated upon three cases of esophageal diverticula. Where operation is not done by the passage of very large bougies or probangs by means of a string guide, a sufficient dilatation of the spur can be caused to allow the passage of food, and food sufficient to keep the patient alive. I have about half a dozen such cases now.

Dr. George W. Crile, of Cleveland: I wish to record two cases of operation for esophageal diverticula, both of which recovered.

Dr. John B. Murphy, of Chicago: The enucleation of the sacs of diverticula is not a difficult matter in itself, but it leaves a large cavity, and it is difficult to avoid the danger occurring from leakage at the suture, infection from the mouth and particularly the action of the salivary glands upon the loose connective tissue of the mediastinum. I believe not opening the sac at all is the only safe procedure.

With reference to foreign bodies in the bronchus, I think more care should be taken to corroborate the history in such cases, as not infrequently on operation no foreign body is found, but some pathological condition which accounts for the symptoms.

Dr. George E. Brewer, of New York: I would call attention to one symptom in esophageal diverticula which is characteristic, that is, the presence frequently during the day, perhaps every hour or half hour, of an accumulation of thick, tenacious mucus which the patient will regurgitate to get relief. My own experience has been limited to 3 cases and 1 operation. This patient was a woman eighty years of age who had lost 50 lb. through starvation. She made a perfectly good recovery from the operation.

Dr. De Forest Willard, of Philadelphia: Surgeons should always remember the possibility of enlarged thymus in sudden deaths in young infants under ether. In such cases one is very likely to be misled by the

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statement that the child has swallowed some foreign body.

Dr. William L. Rodman, of Philadelphia: I believe in cases of foreign bodies in the air passages great risk is incurred in delaying the period of operation, and would urge that all such cases be operated upon immediately upon being seen.

Dr. Nathan Jacobson, of Syracuse: I simply wish to refer to one case of a fifteen months' old child who swallowed a bean. By a tracheotomy the bean was gradually removed and the child made a good recovery. Regarding misleading histories, I was called to see a child suffering from complete obstruction of the trachea. I was told he had swallowed a piece of bone. Subsequent history showed, however, that the child had inherited syphilis, and evidently had gradually increasing disturbance, and the history of the swallowing of the foreign body was purely an assumption.

Dr. Albert Vander Veer, of Albany: With reference to esophageal diverticula, I would like to mention two cases, one in a physician who refused to have an instrument passed and who subsequently died of an acute pneumonia; the other occurring in a woman about fifty years of age. In this case it was impossible to get into the stomach with any form of instrument, and I, therefore, did a gastrostomy and the patient made a splendid recovery. She now alternates between tube feeding and the natural method.

In regard to foreign bodies in the bronchi and in the air passages, I wish to urge that the bronchoscope be made the last resort in such cases and only be employed in the hands of experienced and careful men.

Dr. Joseph Ransohoff, of Cincinnati: I had a very interesting case of abscess of the lung living four or five weeks after operation, the result of the inhalation of a peanut shell.

I would like to mention a case of a foreign body in the air passages which was unsuspected. Some two or three months after doing an intubation for laryngeal croup in a little child, the patient expectorated a small triangular tag such as is used to stiffen the corners of pasteboard boxes; the presence of this foreign body had not been suspected at the time of operation.

Dr. N. B. Carson, of St. Louis (in closing): I cannot too strongly urge the observance of the rule that the bronchoscope should only be used by competent and skillful men. I consider it a dangerous instrument when generally used.

### SOME OBSERVATIONS REGARDING THORACIC SURGERY ON HUMAN BEINGS.

Willy Meyer, M.D., of New York, N. Y.: Dr. Meyer has so far operated upon 10 cases with the help of his differential pressure apparatus for affections of the pleura, lung and esophagus. After discussing the effect of differential pressure, in more rapidly bringing to a close the empyema cavity, as well as its usefulness in the after-treatment, he dwells particularly on the cases of two young patients, six and eleven years old respectively, who had suffered for years from bronchiectatic abscess symptoms; both were bad risks. He extirpated a lobe of the lung in each case, but neither recovered.

Three times exploratory thoracotomy was done for cancer of the esophagus, with recovery. In order to do good surgical work when operating for a malignant stricture of the esophagus, he found it necessary to get the scapula out of the way. He, therefore, proposes as a preliminary operation the Schede-Friedrich flap operation, by which the entire shoulder girdle is turned up, thus permitting the surgeon to make his incision into the thoracic cavity wherever required; often two incisions are necessary. Dr. Meyer prefers the intercostal incision to resection of the rib or ribs. He presented illustrations which demonstrated the procedure.

On March 31, 1910, Dr. Meyer for the first time proceeded in this way for a cancer of the esophagus in a patient forty-three years of age. It was found that the malignant tumor extended from about 1½ inches above the cardia to the aortic arch. After division of the esophagus and inversion of the lower stump through the sixth intercostal, the third interspace was opened and the healthy portion of esophagus reached, outside of the common carotid artery, after proper division of the costal pleura; then the entire diseased portion was shelled out and brought in front of the aortic arch. To the operator's dismay it was found in the course of this latter part of the operation that the growth involved the right pneumogastric nerve; it was impossible to push the nerve off; it had to be divided at the lower end of the tumor, and again interfered with in amputating the esophagus above the upper border of the tumor. The proximal end was also inverted by a double purse-string suture, the intention being to do gastrostomy two or three days later. The interference with the pneumogastric nerve had a deleterious effect upon the heart action, which up to this time had been splendid. The operation was well completed, but in spite of intravenous infusion given, the patient succumbed shortly afterward.

It is pointed out that the only hope of operative success in these cases lies in *early* operation, certainly before the intimately adjacent pneumogastric branches are involved, and the first step of such operation should be to prepare free these nerves. Their involvement will more or less decide the operability or inoperability of the given case.

Additional experimental work is required in order to determine how far we are permitted to divide the pneumogastric on one side of the esophagus should the growth within the latter have encroached upon the nerve. Involvement of the nerve on either side is an absolute contra-indication to going ahead with the operation. Interference with the pneumogastrics during the operation greatly affects the heart's action as well as the respiration. The ordinary stimulants, inclusive of intravenous infusion, are of no avail. Sudden changes in differential pressure, however, have been found of great value. The author briefly discussed how best to carry out in such emergency artificial respiration, which he is able to do also with his differential pressure apparatus.

Up to the present time resection of the esophagus has a mortality of 100%.

### END-TO-END INTESTINAL ANASTOMOSIS BY THE INVAGINATION METHOD.

C. L. Gibson, M.D., of New York, N. Y.: End-to-end intestinal anastomosis by telescoping one segment into the other has been practised from time immemorial, but at present has no recognized position in surgery. As a result of animal experiments and 5 successful cases the author believes that with his present technic it furnishes a method for which there is a demand, particularly in the surgery of the lower end of the colon. The technic is as follows:

The upper cut edge of the gut is seized with two Kocher clamps and introduced by these into the lumen of the lower end and maintained there by an assistant. The extent to which it is feasible to accomplish this invagination will vary. The gut is rotated about a quarter circle so that the non-peritoneal covered surfaces do not entirely approximate in the circumference. Eight to twelve interrupted silk sutures are introduced thus. A Lembert suture is begun on the lower segment,

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the needle issuing just short of the cut edge, on the upper segment the needle is introduced just above the line where the cut edge of the lower segment lies against the intact wall of the upper. When the knot is tied, the free cut edge has been turned inward and only the peritoneal surfaces are in contact. A continuous running suture is applied over this area, further invaginating the first ones, the Kocher clamps being previously withdrawn.

### POST-OPERATIVE INTESTINAL OBSTRUCTION.

George Woolsey, M.D., of New York, N. Y.: *Importance of subject.*—Common occurrence by reason of frequency of abdominal operations, in spite of improved technic. Frequency of septic or paralytic cases much reduced by improved technic. Fifty cases collected in past five years in the Presbyterian Hospital, only 6 of these paralytic obstruction, 9 due to strangulation, 2 to volvulus, and most of the remainder to angulation. Nine of these in my service (mortality 12.5% in 8 operations). An equal number in practice elsewhere.

*Classification.*—Early and late (Broca), mechanical and dynamic (Mikulicz). Mechanical ileus comprises strangulation and obturation. Dynamic, or, better, paralytic, obstruction, most often due to sepsis, some cases due to post-operative atony, others to disturbance of innervation.

*Etiology.* — Two great factors, septic and mechanical.

*A. Mechanical.*—(*a*) Strangulation, usually due to band or volvulus, or both. When blood supply cut off, paralysis of gut is added. (*b*) Obturation commonly depends on angulation. Distended proximal arm of loop presses on distal arm and closes it like a trap, the adhesion of the end of the loop preventing it from being straightened out by peristalsis. Adhesions most often in or near pelvis. Most adhesions disappear in time. Factors determining obstruction by adhesions: (*a*) Adhesions of gut in an abnormal position; (*b*) idiosyncrasy to the formation of many and firm adhesions. Other causes of mechanical obstruction: (*a*) Secondary abscess, causing pressure and usually a valve-like closure, as in cases of adhesions; (*b*) Trendelenburg position; (*c*) pressure of root of mesentery on duodenum, causing arterio-mesenteric ileus or acute dilatation of the stomach.

*B. Paralytic obstruction.* — A similar result (paralysis) due to (*a*) sepsis, the most common cause; (*b*) handling of intestine causing atony, or (*c*) to trauma of nerve supply, as in extraperitoneal operations, etc. Sepsis probably acts mostly by a reflex paralysis on Auerbach's plexus. Peristalsis may be reflexly inhibited through splanchnic nerves (Cannon and Murphy). Overdistention may arise from the atony due to handling or traumatism of nerves or plexus. Overdistention may cause obstruction by causing (*a*) paralysis, (*b*) angulation, (*c*) volvulus.

Obstruction most often follows appendicitis or appendectomy (32 in 50), next most often pelvic conditions (13 in 50), especially ovarian cysts. Mortality of the 50 cases (48 operations), 37.2%.

*Pathology* of fatal result. Death due to bacteriemia in septic peritonitis. Where no peritonitis, death attributed to auto-intoxication (neurin, putresciu, etc.). Braun denies this and claims terminal sinking of blood pressure due to basal anemia from great blood stasis in splanchnic area, and that drainage of bowel favors cure by relieving congestion in splanchnic area, not by avoiding auto-intoxication. Several experiments confirm this.

*Diagnosis* easy from symptoms in late cases. If morphine has to be repeated for pain, operate for obstruction. In many cases we can distinguish between strangulation and obturation by "peritoneal shock," intensity of onset and symptoms. In some cases we can locate position of obstruction by position of early pain, distention, exaggerated peristalsis, character and onset of vomiting, Von Wahl's sign, etc.

In *early cases* diagnosis not so easy, obscured by peritonitis, operative trauma, sequelæ of anesthesia. Where peritonitis was or is present, must distinguish between it and obstruction. Many of the symptoms identical. Diagnostic symptoms given. Rigidity the important sign of peritonitis; absolute constipation, of obstruction. If latter cannot be relieved, diagnose obstruction. Some early causes of mechanical origin. Important but difficult to distinguish them. Presence or absence of pain, peristalsis, distention and other signs help to determine question. Possibility of acute dilatation of stomach (symptoms enumerated), and of obstruction with many symptoms lacking must be remembered.

*Treatment.*—*A.* Prophylaxis, great importance and success of it. Problem is to prevent sepsis, operative trauma and adhesions, to which nearly all cases are due. Hence operate all cases of appendicitis as soon as diagnosis is made. When septic peritonitis present, modern technic (Murphy's) will cure most cases and prevent paralytic ileus. Opposite plan advocated by some, i. e., excitation of peristalsis to distribute germs, increase hyperemia of peritoneum and thereby the autolysis and resorption of the pus. Physostigmine or atropine used by some before and after operation. The real field for this is in post-operative atony. To prevent the atony, avoid rough and undue handling of intestines. When early distention is marked and increasing, gain early action of bowels by enemata of various kinds, with or without physostigmine. Stupes and lavage also very useful. Careful post-operative treatment of diet, digestion and bowel movement very essential prophylactically.

*Adhesions* a prolific source of obstruction. Can we prevent them? Not altogether. It is largely a matter of careful technic. Operate early, rapidly, yet carefully; avoid drainage. If drains necessary, the kind of drains and their position of great importance. Remove source of infection, avoid displacing of bowels, cover denuded peritoneum if possible, encourage early peristalsis and frequent change of position after operation. Can we prevent the re-formation of adhesions? No, we may minimize them. Great variety of substance interposes between raw surfaces. No one a panacea. Many enumerated. Mucilage apparently the best.

*Treatment* of actual obstructions is *operative.*

*Late obstructions.* — Ample incision over site of obstruction if known, otherwise exploratory. Operate early. Collapsed and distended coils guides to obstruction. Relieve cause. If gut not viable, resect and anastomose.

*Early obstructions.* — Palliation by enemata, physostigmine, lavage, etc., should not be persisted in too long. Most cases operated too late. If mechanical cause suspected, laparotomy and relief of cause. If paralytic obstruction, enterostomy with flushing and syphonage. Technic of enterostomy. Objections to enterostomy. It should be done earlier to avoid the present poor results. In the early obstructions prophylaxis has given best results and made them much less frequent.

### DISCUSSION.

Dr. Charles H. Mayo, of Rochester, Minn.: I want to testify to the invagination method being a good one in the removal of tumors low in the sigmoid, at the upper rectum; in fact, it is about the only way you can

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get a union, — to invaginate the upper end into the lower.

Dr. John B. Deaver, of Philadelphia: I wish to report the following cases in this regard. The first is as follows: In the early part of last winter an artificial anus caused by ulcerative separation of the lower sigmoid at junction with rectum, due to pressure necrosis consequent upon the presence of an old appendiceal abscess, evacuated through the linea alba some weeks previously. Spencer Wells forceps passed up rectum and sigmoid brought down to anus and stitched to freshened margin of anus. Patient made a good recovery. The second case occurred three weeks ago, being one in which the lower sigmoid was damaged in removal, by pan-hysterectomy, of a uterine tumor involving the bowel. Patient recovered.

Dr. Albert J. Ochsner, of Chicago: If immediately upon the appearance of nausea or gaseous distention gastric lavage be instituted, there will be fewer instances of intestinal obstruction following shortly after operation. As regards intestinal obstruction due to conditions appearing many weeks after operation, our observation has been that we have practically no mortality excepting in those cases coming under our treatment after having received cathartics.

Dr. E. Wyllys Andrews, of Chicago: End-to-end anastomosis implies for success that we get our lumen at once, and this is not true with the McGraw ligature; but if we can devise a method by which all the advantages of this ligature can be strengthened by obtaining the open lumen immediately, we will have an ideal method.

Dr. Alexander H. Ferguson, of Chicago: In regard to operative obstruction and the prevention of adhesions following operations, I would say that for four years I have used subgalate of bismuth, smearing it over all raw surfaces, with most complete satisfaction.

Dr. Arpad G. Gerster, of New York: If we want to make headway against obstructions caused by adhesions, we must first know the cause of the adhesions, and this we do not know at present. Many causes have been exploited, the use of packings, the handling of the intestines and other mostly traumatic lesions to the peritoneal coat, but we have seen in the presence of the greatest traumatism that could be inflicted on the intestine that adhesions did not form. Here the pathologist and experimental surgeon must come to our aid. I believe that the cause must be looked for in certain conditions of the blood of the patient.

### ABNORMAL POSITION OF THE DUODENUM.

G. E. Armstrong, M.D., of Montreal, Canada: The duodenum is singularly constant in its relations, course and length; any exceptions are exceedingly rare and worthy of note.

In the anomaly reported, the duodenum ran to the right and then turned downwards external to the hepatic flexure, ascending colon and cecum, and, merging into the jejunum, passed from without inwards below the cecum into the small intestine area. The duodenum was completely surrounded by peritoneum. It had a long mesentery throughout and could easily be held two or three inches in front of the abdominal wall. The head of the pancreas, closely applied to the duodenum, was visible and palpable between the layers of the duodenal mesentery, and readily followed the duodenum when the latter was brought outside the body.

Instead, therefore, of passing across the second lumbar vertebra and behind the transverse colon and superior mesenteric artery, it retained an early embryological position. There was, of course, no ligament of Treitz and no fossa duodeno-jejunalis. The condition is clearly one of arrested development. The cecum in this case did not mount upwards to the lower hypochondrium and did not pass in front of the loop of the duodenum. The cecum did not descend to its usual final resting place in the right iliac fossa. It was high, completely surrounded by peritoneum, very movable and could be brought out through the epigastric incision and held eight inches in front of the body.

### DISCUSSION.

Dr. Maurice H. Richardson, of Boston: I would report a case in which the appendix, the gall bladder, the liver and the ileocecal valve were on the left side, the spleen on the right side, and the heart on the right side.

Dr. Emmet Rixford, of San Francisco: I would like to put on record a case of failure of rotation of the primary gut. The explanation of this condition is probably to be explained on the basis of adhesions of the cecum to the parietal peritoneum, the result of a fetal peritonitis.

Dr. Leonard Freeman, of Denver: I had a case in which acute dilatation of the stomach followed an unimportant pelvic operation, and which at autopsy showed the duodenum passing directly beneath the liver and firmly attached to the posterior abdominal wall and around the right side as far as the hepatic flexure of the colon.

Dr. Joseph A. Blake, of New York: I have met with two cases of abnormal position of the duodenum in my practice. I do not think there is apt to be dilatation in such cases, as the mesenteric vessels do not cross the duodenum, and the duodenum, instead of being bound down, is usually free.

Dr. Alexander Primrose, of Toronto: I would like to emphasize the fact that these conditions of abnormality in the position of the duodenum may occur without giving rise to the slightest symptoms.

Dr. Joseph C. Bloodgood, of Baltimore: I would like to record one other anomaly of the intestinal tract which I think must be very unusual, namely, absence of the appendix.

*(To be continued.)*

## Book Review.

*Diseases of Infancy and Childhood. Their Dietetic, Hygienic, and Medical Treatment.* A Text-Book Designed for Practitioners and Students in Medicine. By Louis Fischer, M.D., Attending Physician to the Willard Parker and Riverside Hospitals; Attending Pediatrist to the Sydenham Hospital, etc. Third edition. Pp. 980. Three hundred and three illustrations several in colors, and twenty-nine full-page half-tone and color plates. Philadelphia: F. A. Davis Co. 1910.

This, the third edition of this well-known work, has been thoroughly revised and enlarged, but, as before, the work is far from being a satisfactory one. It is badly arranged, some conditions being given far more attention that they deserve, and others being slighted. It contains a great deal of valuable information very poorly classified. While, of course, a useful book, it is far inferior to several other American textbooks on the same subject.

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THE BOSTON

# Medical and Surgical Journal.

THURSDAY, OCTOBER 13, 1910

*A Journal of Medicine, Surgery and Allied Sciences, published at Boston, weekly, by the undersigned.*

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## SOME PUBLIC ABOMINATIONS.

ATTENTION has recently been called in the daily press to the non-enforcement of our law against spitting in public places. The evils of promiscuous expectoration are sufficiently obvious to need no comment. The trouble is that there is not yet a sufficient public sentiment against spitting to compel its discontinuance. There is something in the irresponsible and defiant lawlessness of the habit which makes it appeal to the undisciplined independence of the American temperament. The wilful spitter, — and most offenders are of this class, — by the act proclaims his contemptuous disregard of others, like the upstart millionaire who boasted, on returning from his travels, that he had spit tobacco-juice on the floor of every palace in Europe. Spitting is a public abomination, an offense against hygiene, against decency, against good manners; but it will not be abolished from among us until education leads people to realize its vulgarity as well as its dangers.

A further evidence of the slowness with which real civilization progresses may be observed in the common drinking cup, whose banishment we have only just essayed, and to which many persons still cling with the blind obstinacy of Ephraim wedded to his idols. Nothing in the world dies so hard as a fetish, or so easily as the people whom it kills. The common roller-towel is another abomination whose abolition should go hand in hand with that of the public drinking-cup. One reason for its continued persistence is the expense of laundering many individual towels. Recent report from Milwaukee states that the Board of Education in that immaculate and famous city has adopted, for use in the public schools, individual paper towels, which are very cheap and are intended to be used once and then burned. This substitute seems satisfactory and worthy of general adoption. In the matter of towels, however, we may at least flatter ourselves that we are even now a step in advance of Europe, where in every lavatory the towel that hangs upon the wall, far from soap and water, suggests possibilities of uncleanliness and disseminated infection almost too disgusting for even a physician to contemplate.

Such observations on the "ways and works of man" are enough to show that in some respects he is still "very little changed from the semi-apes." Perhaps, indeed, it was a dubious compliment to call him "the paragon of animals." Howbeit, it were better to look on the other side of the picture and reflect that we have already begun the relegation of these abominations to the limbo of outgrown infirmities. If the habit of spitting be in our community

> "The dram of eale
> Which doth the noble substance often dout
> To his own scandal,"

its abolition should be one of the desiderata which Boston may hope to attain in its approaching year of perfection.

## CHOLERA SITUATION.

THE European epidemic of Asiatic cholera has continued with little change during the past week. In Russia conditions are as bad as ever. Genuine efforts are, no doubt, made by the government to combat the disease, but these are to a great extent thwarted by the ignorance and superstition of the peasantry, who, believing that the cholera is an evil spirit that can be appeased only by having his glut of victims, refuse all aid and instruction, mob the doctors, nurses and sanitary officials, and persist in drinking polluted water and in disregarding all measures for the prevention of infection. Moreover, the primitive hygienic provisions prevailing in many parts of Russia make such measures largely unavailing. Of the 762 cities of European Russia, it is stated that only 149 have a municipal water-supply and only 27 any system of drainage. Under such circumstances it is no wonder that the people die like flies. It is estimated that in the past six weeks alone there have been, in Russia, 150,000 cases and 75,000 deaths of cholera.

In Italy, where the epidemic is on a smaller scale and should be much more controllable, there seems little sign of cessation of the disease. The

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record of incidence and mortality for the week of Oct. 1 to 8, as nearly as can be learned from available reports, is as follows: In the city of Naples, 54 new cases and 24 deaths; in the province of Naples, exclusive of the city, 43 cases and 13 deaths; in Apulia, 3 cases and 3 deaths; in the province of Sassari, 2 cases; at Torre del Greco, 1 death; and in the provinces of Avellino, Bari and Casserta, 12 cases and 5 deaths. The disease has also appeared in the island of Sardinia, where 4 cases and 1 death were reported on Oct. 3. As yet the infection has not invaded France, though 3 cases were found on board the steamer *Bosphore* in port at Marseilles.

In the United States, stringent precautions to prevent introduction of the disease continue to be observed. Every immigrant from an infected port is detained five days under quarantine before sailing and every steerage passenger five days on arrival. These measures have resulted in the detection of several suspicious cases, three of which in New York appear to have proved to be genuine Asiatic cholera. One of these patients has since died; the two others at latest accounts are still in the Swinburne Island Hospital. The rigor with which these precautions are enforced has aroused protest from the Italian government, which objects also to our inspection of merchandise and foodstuffs for exportation to the United States from infected districts. Our government has, however, not yet thought it necessary to lay an embargo on such goods. Notwithstanding, the United States Public Health and Marine-Hospital Service has doubled its detail of officers on duty at every port in Russia, Italy and Germany from which emigrants sail in large numbers. These measures need excite no popular apprehension in this country; they are merely evidence of the vigilance which constitutes our safety. The same is true of the meeting of the Advisory Public Health Board, called in Washington on Oct. 10, presumably to consider the cholera situation. We have as yet no report of the action of this meeting, but there is no reason to regard its convocation as evidence of particular danger. Our health officials are zealous and intelligent, and intelligence and zeal afford ample protection against such a disease as Asiatic cholera.

## DANGERS OF SCANTY WATER SUPPLY.

In spite of the statement recently made that the water-supply of Boston is sufficient to last for nine months in the entire absence of rainfall, it remains true that a long-continued drought, like that of the past summer, seriously reduces the quantity and may impair the quality of the water-supply of smaller cities and towns less fortunately circumstanced. It is reported, for instance, from Palmer, Mass., that of the three reservoirs used by that city, two are dry and the third very low. An engineer sent by the Massachusetts State Board of Health to inspect these reservoirs is said to have reported on Oct. 6 that, owing to exposure of their shores, the condition of the remaining water is such as to render it unsafe for drinking unless boiled. There is now barely sufficient water for drinking and bathing, and not enough to fight a serious fire, should such occur.

The importance of adequate and pure water-supply for the health and safety of a community is self-evident. Moreover, as emphasized by the recent statistics of Sedgwick and MacNutt in the *Journal of Infectious Diseases* [reviewed in this Journal, vol. clxiii, p. 524], there is a much less obvious but none the less apparently definite relation between purity of supply and the incidence of diseases not commonly thought of as water-borne. The causes on which this relation is based are not yet clearly understood, and the morbidity statistics of Palmer for the current and succeeding year might reasonably be expected to throw interesting light on the question. Meantime it is desirable that not only Palmer, but other cities similarly situated, should make every effort to secure a water-supply which shall guarantee them from recurrence of the present unfortunate conditions.

## CHOLERA THEN AND NOW.

When, in 1892, the news came that cholera had entered the port of New York, something like a general panic resulted. "Flustered officials, state and municipal," to quote a lively description of the state of affairs, "rushed into action in such haste that the measures they took came near starting a little war. Indeed, soldiers, or near-soldiers, of various sorts had to be ordered out to enforce the governor's orders, and a lot of money was spent for beach land with which nothing was ever done." Now, by reason of the progress which has been made in sanitary science since then, and the reliance on its protective efficiency, a similar announcement has been received by the authorities and the public with perfect composure. On the steamer *Sant' Anna*, of the Fabre Line, which arrived recently from Europe, a steerage passen-

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ger died from cholera during the voyage and was buried at sea, and on Oct. 4, Health Officer Doty made public the fact that one suspect who arrived on Sept. 26 on the steamer *Germania*, also from Italian ports, had died from the disease three days later. Six of the passengers on the *Germania* who were reported in the ship surgeon's journal as having applied for treatment for minor troubles, but were well on arrival, were removed to Swinburne Island for observation. Two days later one of these, a Greek aged twenty-eight years, was taken ill again, twenty-four hours afterwards he was in a condition of collapse, and in twelve hours more he died. In commenting on this case Dr. Doty has made the following interesting statement: "Although the autopsy showed no evidence of cholera, the examination of the secretions of the intestinal tract showed the presence of suspicious organisms. Specimens were sent to Dr. Wm. H. Park, of the Health Department of this city, and to Dr. Anderson, the bacteriologist of the United States Marine-Hospital Service, and the results indicated that the patient died of cholera. This is a practical demonstration of what is known as 'cholera carrier'; that is, persons who may carry organisms of the disease without any symptoms to indicate its presence. In this case it was demonstrated that the extreme precautions taken were fully justified. As the *Germania* case gave practical proof of the fact of 'cholera carriers,' it indicates that in the future additional measures must be put in force." On Oct. 6 it was announced that a coal trimmer on the steamer *Moltke*, which arrived on the 5th, was suffering from genuine Asiatic cholera, as shown by the bacterial examination. This was a comparatively mild case, and the latest reports are to the effect that the patient is in a fair way to recover.

## THE BOSTON HOSPITAL SCHOOL.

It was recently voted by the trustees of the Boston Consumptives' Hospital to close the Hospital School maintained by the city at Franklin Park. A committee appointed by the Boston Association for the Relief and Control of Tuberculosis to investigate the value of this school has reported unanimously in favor of its continuance, and in a letter to the mayor the Association strongly urges reconsideration of the action of the trustees. The committee finds that, of 161 tuberculous children who have been sent to the Hospital School, 51 have been discharged, of whom 35 have been returned to the public schools, 28 with their disease arrested or improved. Moreover, the children, while in the Hospital School, have not only benefited in health, but have shown as good progress in studies as those in the regular schools. The committee, therefore, believes that the Hospital School is of value not only for the good it does to individual children, but as an educational agency and a means of gaining the confidence of the public in municipal efforts for the relief and control of tuberculosis.

The work of such an institution is an object lesson in the possibilities of intelligent treatment. Accordingly the association recommends that the Boston Hospital School be not discontinued, and that the trustees of the Consumptives' Hospital build and maintain, in addition, a cottage sanatorium at Mattapan for such tuberculous children as are too sick to attend the Hospital School, or who are mentally defective.

It is sincerely to be hoped that this counsel of experts will be heeded. The success of the Massachusetts Hospital School at Canton might be cited as additional evidence of the possibilities of such institutions, and as argument against the closing of the Boston school. Education and early treatment are the two essentials of ultimate victory in the campaign against tuberculosis, and nowhere can these be better combined than in such an institution as the Boston Hospital School.

## PSYCHOLOGY FOR PHYSICIANS.

Under the auspices of the Harvard University Extension Course it is proposed to offer work in psychology under the direction of Prof. Robert M. Yerkes, of the Psychological Department of the University, the course to be an introduction to the study of the principles, methods and values of the science of mental life. The prospectus announces the course as follows:

"The primary aim of the course is to acquaint each student with his own mental life and to arouse interest in the observation of individual mental traits and tendencies.

"By means of lectures, demonstration experiments, conferences, reading and written exercises students in this course are introduced to the study of consciousness. The lectures and demonstration experiments together serve to exhibit the characteristics of the materials, aims, methods and values of psychology. From them the student should gain a knowledge of the chief facts and laws of mental life and an intelligent appreciation of scientific method. The conferences and exercises are planned as aids to the acquisition of the introspective attitude and the development

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of skill in self-observation. It is essential that every beginner in psychology should learn to study consciousness for himself."

In view of certain definite and, we believe, highly salutary tendencies in present-day medicine, it is altogether desirable that medical students should have a much more definite knowledge of the laws of mental life than is at present obtainable in any of our medical schools. Opinions may differ as to the desirability of prescribing such courses in the already overcrowded medical curriculum, but certain students whose interest lies essentially in disorders of the nervous system, and in the field of mental disease in particular, should have an opportunity, while pursuing their medical studies, to acquire such psychological knowledge. This University Extension Course offered by Professor Yerkes is admirably adapted to this end and should certainly receive the support of students interested in the difficult and important problems now before the medical profession relating to the nervous system and the mind.

## MEDICAL NOTES.

The Cost of Radium. — Report from London states that the present market price of radium is at a rate representing a cost of $2,100,000 an ounce.

Yellow Fever in Mexico. — It is reported that yellow fever has again broken out in Mexico, and there are said to have been two deaths from the disease at Campeche during the past week.

Death of a Former Army Nurse. — Mrs. John Mason Loomis, a former army nurse, who died at Chicago on Oct. 7, was born in Shelburne, N. Y., on Aug. 15, 1829. At the outbreak of the Civil War she went to the front with the regiment of which her husband was colonel, and served throughout the war at the head of a company of Red Cross nurses. She leaves no children. Her entire fortune, amounting to about $1,250,000, is bequeathed to the Loomis Institute, of Windsor, Conn., for the foundation of a technological school.

Two Centenarians. — Mrs. Mary Boss, who died last week at Schenectady, N. Y., was locally reputed to be one hundred and four years of age. She was born in Germany.

William Macabee, who died last week at Philadelphia, is said to have been born in Baltimore on Sept. 22, 1803. At the time of his death he was the oldest veteran of the Civil War, and he was the last survivor of the crew of the frigate *Constitution*, on which he enlisted shortly after the War of 1812, and on which he served for many years. He fought as an able-bodied seaman throughout the Civil War, and continued in the navy afterwards until age compelled his retirement.

Officers of the Roentgen Ray Society. — At the annual meeting of the American Roentgen Ray Society, recently held at Detroit, Dr. Percy Brown, of Boston, was elected president of the society for the ensuing year; Dr. Walter C. Hill, of Cleveland, Dr. Willis Manges, of Philadelphia, and Dr. A. C. Skinner, of Kansas City, were elected vice-presidents; Dr. F. H. Baetzer, of Baltimore, secretary; and Dr. Charles F. Bowen, of Columbus, treasurer. Dr. Fedor Haenisch, of Hamburg, the delegate of the German Roentgen Association to the meeting, is in Boston this week on his way to return to Germany.

The Harvey Society. — The lecture course of 1910–11 under the patronage of the New York Academy of Medicine is as follows: Oct. 15, 1910, Prof. H. Chiari, University of Strassburg, "Die Bedeutung der pathologischen Autopsie und sonstiger pathologisch-anatomischer Untersuchungen." Nov. 5, Prof. W. E. Castle, Harvard University, "Unit Characters in Heredity." Nov. 19, Prof. Jacques Loeb, Rockefeller Institute for Medical Research, "The Prevention of the Toxic Action of Various Agencies through the Prevention of Oxidation in the Cell." Dec. 10, Prof. Harvey Cushing, Johns Hopkins University, "Certain Clinical Aspects of Dyspituitarism." Jan. 14, 1911, Prof. Arthur R. Cushny, University of London, "Therapeutics of Digitalis." Feb. 4, Dr. Thomas B. Osborne, Connecticut State Agricultural Experiment Station, "The Chemistry of the Proteins." March 25, Prof. H. Gideon Wells, University of Chicago, "Calcification and Ossification."

### BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston.— For the week ending at noon, Oct. 11, 1910, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 33, scarlatina 22, typhoid fever 33, measles 9, smallpox 0, tuberculosis 61.

The death-rate of the reported deaths for the week ending Oct. 11, 1910, was 16.33.

Boston Mortality Statistics.—The total number of deaths reported to the Board of Health for the week ending Saturday, noon, Oct. 8, 1910,

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was 220, against 201 the corresponding week of last year, showing an increase of 19 deaths, and making the death-rate for the week, 17.11. Of this number 100 were males and 120 were females; 216 were white and 4 colored; 143 were born in the United States, 74 in foreign countries and 3 unknown; 43 were of American parentage, 156 of foreign parentage and 21 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 32 cases and 6 deaths; scarlatina, 29 cases and 1 death; typhoid fever, 32 cases and 3 deaths; measles, 10 cases and 0 deaths; tuberculosis, 61 cases and 22 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 20, whooping cough 2, heart disease 28, bronchitis 0. There were 12 deaths from violent causes. The number of children who died under one year was 52; the number under five years, 72. The number of persons who died over sixty years of age was 52. The deaths in public institutions were 77. Cerebrospinal meningitis, 4 cases and 1 death. Anterior poliomyelitis, 3 cases and 3 deaths.

Of the above infectious diseases the following were non-residents: Consumption, 2 cases. Diphtheria, 1 case. Typhoid fever, 7 cases and 1 death. Scarlet fever, 2 cases.

Deducting deaths of non-residents, the total is 200 and the death-rate is then 15.55.

Bequest to the Dorchester Home for Consumptives. — Among other charitable bequests in the will of the late Margaret Horrigan, of Cambridge, Mass., which was filed last week in the Middlesex Probate Court, is one of $200 to the Free Home for Consumptives, Dorchester.

Sale of Impure Vinegar. — In the Boston municipal court last week, a corporation engaged in the manufacture and sale of vinegar in this city was fined $100 "for having in its possession on July 18 last, with intent to sell, and for selling on Sept. 23, vinegar containing caramel coloring matter," in violation of the regulations of the Board of Health.

Poliomyelitis in Rhode Island.— The epidemic of poliomyelitis in Rhode Island continues. On Oct. 7, three new cases of acute poliomyelitis were reported to the Rhode Island State Board of Health, one in Providence, one in Cumberland, and one in Anthony. In Providence there was also one death from the disease on the same day. This makes a total of 166 cases reported in Rhode Island since June 1, and 194 cases with 22 deaths since the beginning of the current year.

Endowment Needed for a Tuberculosis Camp. — Two years ago Mrs. Theodore K. Gibbs purchased for $20,000 a tract of land in Middletown, R. I., and offered to erect on it and present to the Newport (R. I.) Hospital a tuberculosis camp. This offer the hospital refused until adequate endowment for the camp should be provided. That endowment is not yet forthcoming and the enterprise still awaits the generosity of some philanthropist for its completion.

Work of the Boston Floating Hospital. — The Board of Trustees of the Boston Floating Hospital publishes the following statement of the work done by the hospital during the season of 1909. "Last summer 384 different permanent patients received care for an average of 19 days of twenty-four hours each, or a total of 7,367 full days' service; 667 day patients made 4,683 day trips; mothers who accompanied their sick children and received instruction in nursing, helping in their care, made 4,874 day trips; 831 day trips were made by well children too small to be left at home by their mothers. This represents a service to the beneficiaries of this work of a total of 17,755 days for the summer of 1909." This record gives strong enforcement to the appeal made by the trustees for donations to meet the expenses of the season just ended and make possible the continuance and extension next year of this valuable medical charity.

"Ether Day" at the Massachusetts General Hospital. — In our issue of last week we announced that "Ether Day" at the Massachusetts General Hospital on Oct. 15 would be addressed by Dr. Geo. W. Crile, of Cleveland, Ohio. This fact in itself should lead to a large attendance on the part of the medical profession in this vicinity. It may not be generally known, but for some years past the meeting commemorative of the discovery and practical use of ether at the Massachusetts General Hospital has assumed a somewhat formal character, with an address from a man distinguished in some walk of life, though not necessarily in medicine. This year the address is to be made by a surgeon of originality who has done much to forward the science of medicine in his line, and it is not to be doubted that his address will be of vital interest, particularly to the medical profession. It is to be hoped the attendance will be generous.

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Physical Examination of City Laborers. — The Civil Service Commission has recently adopted a regulation providing for compulsory physical examination of all applicants for employment as laborers by the city of Boston. This regulation, which becomes operative on and after Dec. 5, 1910, requires examination by a physical inspector as part of the test for general fitness of every candidate. The physical defects enumerated as deemed sufficient cause to warrant rejection are: Serious defects of sight or hearing, cardiac or pulmonary disease, paralysis, serious spinal deformities, stiff joints, loss of limb such as to impair present or future usefulness, marked flat foot, severe varicose veins or ulcers. In addition every man will be required to pass a strength test by demonstrating his ability to lift, shoulder and carry a 'sack containing 75 pounds' weight. It is surprising to find that such a regulation has not previously been in existence. Its adoption now should not only increase the physical efficiency of the city's labor force, but should to a certain extent lessen the opportunity for graft in the employment of those incapable of rendering the service for which they are paid.

NEW YORK.

Open-Air School at Montclair, N. J. — On Oct. 3 it is proposed to inaugurate an open-air public school for children not of good health in Montclair, N. J. A tent will be used for the purposes of the school, with arrangements for a maximum of fresh air. A wooden floor will be provided and regulation school desks. The clothing to be worn is to consist of woolen garments and a bag made of warm material which may be drawn over the feet in cold weather. Heated soapstone is to be used to keep the feet of the children warm. No decision has yet been reached regarding the food, and until this question is decided there will be only one session of the school daily.

The Lobster and Typhoid Fever. — While the lobster has been accused of giving rise to many "ills," it has not hitherto been regarded, like the oyster, as a source of typhoid fever. This charge has now been brought against it in the case of a number of persons who partook of a dinner given on Sept. 7 under the auspices of a certain political and social club of Elizabeth, N. J., at which lobster salad was a prominent feature. It is, of course, quite possible that the typhoid infection may have been contracted from some other ingredient of the salad, or from some other viand than the salad, but it is an unquestionable fact that a considerable number of those at this dinner have been attacked with the disease. On Sept. 27, there were sixteen serious cases, and three others had already proved fatal, while the bacteriological tests have shown that the affection is genuine typhoid fever. In the meanwhile Health Officer Richards has secured the names of all who attended the dinner and of all dealers who furnished the food served at it, and has commenced an investigation which it is to be hoped will definitely settle the source of infection.

International Pure Milk League. — "The International Pure Milk League" has been incorporated in the county of New York by a number of prominent women. The objects of the league are stated to be, "to foster and encourage the production, distribution and consumption of pure milk and pure food generally; to foster and promote the common interests of producers, dealers and consumers of milk and all other articles of food; to foster and promote methods of cleanliness in the handling of milk and all other articles of food, from the producer to the consumer, throughout the civilized world; to foster and promote local and foreign organizations of a similar purpose, with or without the league as a central or parent body."

"A Budget Show." — A "Budget Show," a novelty in municipal undertakings, in which all the various departments of the city's administration have exhibits, was opened in a commodious building on Broadway on Oct. 3. Mayor Gaynor, who appeared at the City Hall on that day for the first time since his attempted assassination, was expected to have charge of the opening ceremonies, but as it was deemed inadvisable for him in his present state of health, President Mitchell, of the Board of Aldermen, officiated in his place. The work of the Health Department in combating disease and promoting sanitation is admirably represented in this exhibition, and on Oct. 4 Commissioner Lederle made an address in which he set forth the special needs of the department. In the Division of Child Hygiene an increase of $316,145 for next year is asked for, and this includes provision for the employment of 266 nurses in addition to the present force of 142, and 49 medical inspectors in addition to the present number, 161, in order to admit of the physical examination of the children attending all the free schools of the city, instead of, as at present, the public schools only, and to continue throughout the year the instruction of mothers in the care of

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their infants, instead of, as at present, during the summer months only. The largest increase, $487,796, is asked for the Division of Hospitals in order to provide one physician to every forty patients, one day nurse to every ten patients and one night nurse to every fifteen patients. The present appropriation makes allowance for only one physician to every ninety patients, one day nurse to every sixteen patients, and one night nurse to every twenty-one patients.

## Current Literature.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

SEPT. 17, 1910.

1. YOUNG, G. B. *The Proposed Enlarged National Public Health Organization.*
2. REED, C. A. L. *Extra-Capsular Fixation of the Movable Kidney.*
3. PARKE, T. D. *Further Report on Ileocolitis Complicated by Acidosis.*
4. HUMMEL, E. M. *Syphilitic Disease of the Arteries of the Central Nervous System, with Report of a Case.*
5. WASSERMANN, S. *A New Method of Vaccination.*
6. MOORE, H. A. *A Modification of the Young Prostatic Tractor.*
7. HUNT, E. L. *Cobweb Brain. A Contribution to the Pathology of Idiocy.*
8. BLEDSOE, A. C. *Unusual Site of Typhoid Perforation.*
9. SUTTON, R. L. *Sporotrichosis.*
10. LEWIS, D. D. *Tumors of the Hypophysis.*
11. *LEVISON, L. A., AND DACHTLER, H. *Clinical and Roentgengraphic Study of the Essential Differences between the Physical Findings in Childhood and Adult Life.*
12. ROBERTSON, H. E. *Pathology and Bacteriology of Acute Anterior Poliomyelitis.*
13. SILVER, D. *Surgical Treatment of Infantile Spinal Paralysis.*
14. *MELTZER, S. J. *Bronchial Asthma as a Phenomenon of Anaphylaxis.*
15. PFEIFFENBERGER, J. M. *Vomiting of a Gallstone.*

SPECIAL ARTICLE.

*Epidemic Poliomyelitis. A Discussion of the Prevalent Infantile Paralysis.*

11. Levison and Dachtler conclude their article as follows: Roentgen examination affords an unexcelled method of controlling the results obtained by physical diagnosis. The teleoroentgenographic method reduces the error by distortion to a negligible quantity and is well adapted to routine work. The anatomic location of the normal thymus renders its differentiation by Roengen rays improbable. The demarcation of heart borders in terms of bony landmarks does not offer a fair comparison with adults, owing to the continued change in the development of the bony structures. Absolute heart-dullness in children can be quite accurately determined by very light percussion and the results confirmed by Roentgen rays. The relatively great volume of the great thoracic vessels in children offers the greatest difficulty in determining the size of the heart by physical methods only. Extremely light percussion has not given us normal impaired resonance between the upper borders of the great vessels and the clavicle. Roentgen examination has confirmed the absence of a density of tissue which would produce such dullness.

14. Meltzer's excellent article gives a very clear idea of the process of anaphylaxis and is summed up as follows: It is generally agreed that the so-called nervous asthma is due to a stenosis of the bronchioli. It was discovered that the so-called anaphylactic shock is due also to a stenosis of the fine bronchi. The theory is here offered that asthma is an anaphylactic phenomenon, that is, that asthmatics are individuals who are "sensitized" to a specific substance, and the attack of asthma sets in whenever they are "intoxicated" by that substance. It has been proven that the anaphylactic attack is of peripheral and not of central origin. It is, therefore, suggested that the so-called nervous asthma is also due to a peripheral and not a central cause. In other words, "nervous asthma" is not a neurosis.

[E. H. R.]

SEPT. 24, 1910.

1. BECK, H. G., AND STOKES, W. R. *A Case of Diffuse Purulent, Ventriculo-Septal Myocarditis with Adams-Stokes' Syndrome.*
2. LEMANN, I. L. *Study of a Case of Heart Block with Alternation of Systolic and Diastolic Jugular Waves.*
3. HOMAN, G. *Instruction of the Public in Antituberculosis Measures by a Traveling Car Exhibit.*
4. WHITE, C. J. *Alopecia and Seborrhea.*
5. HALLBERG, C. S. N. *The External Preparations of the United States Pharmacopeia and National Formulary.*
6. MUSCANTE, A. S. *Medico-Pharmaceutical Ethics.*
7. WEINSTEIN, J. W. *The New Test for Cancer of the Stomach, with Suggested Improvement.*
8. *WALTER, W. *A Study of the Bacterial Flora of the Nasal Mucosa in the Presence of Rhinitis.*
9. ELTERICH, T. J. *A Clinical Study of a Case of Pseudo-leukemic Anemia of Infancy (Von Jaksch).*
10. *SAENGER, A. *Choked Disk in its Relation to Cerebral Tumor and Trephining.*
11. MCEWAN, J. S. *Dislocation of the Shoulder-Joint Complicated by Fracture, with Report of Two Cases.*
12. *FLEXNER, S. *The Contribution of Experimental to Human Poliomyelitis.*
13. *MURPHY, J. B. *The Arsenical Treatment of Syphilis.*

8. Walter, from his bacteriologic investigations, concludes that the diphtheroids, particularly the Bacillus Segmentosus, are concerned in the production of the so-called common cold in its typical manifestation in the nose, and there is much evidence that it occurs in epidemic form. The micrococcus catarrhalis is much more common in its manifestation and is probably also epidemic and productive of more severe inflammation, though mild epidemics occur. It seems likely that a mixed infection of these two types increases the virulence. The pneumobacillus of Friedländer is much more concerned in chronic conditions and is probably identical with the ozena bacillus. The pneumococcus of Fränkel flourishes in any part of the upper respiratory tract. Segmentosus is most likely to be in the nose, seldom in the trachea, and may cause otitis media. Catarrhalis is most apt of all to invade the larynx and trachea. The pneumobacillus is mostly confined to the nose and sinuses. Influenza bacilli are conspicuous by their absence. Pyogenic cocci are non-pathogenic locally, except as secondary invaders.

10. Saenger presents an historical review of the theories of choked disk and advances his own that the main cause is increased cerebral tension. This is substantiated by the rapid disappearance of the condition after decompression in cerebral tumors. He advises decompression at the beginning of visual diminution, before atrophy of the optic nerve develops.

12. Flexner gives a complete review of our present-day knowledge of anterior poliomyelitis, with special reference to recent experimental results. It is a very-comprehensive paper.

13. Murphy advises the use of the sodium cacodylate of arsenic in the treatment of all stages of syphilis. It is given in 3 to 6 gr. doses by mouth or 1 to 2 gr. doses daily hypodermically. It is remarkable how quickly the spirochete will disappear from mucous patches or the primary sore under this treatment. This is the safest arsenical preparation to use, and seems to be a specific against the spirochete. [E. H. R.]

THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES.

SEPTEMBER, 1910.

1. *HENDERSON, V. E. *The Therapeutic Action of Digitalis.*

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2. *Friedenwald, J. *Digestive or Alimentary Hypersecretion of Gastric Juice.*
3. *Sailer, J. *Chronic Pancreatitis.*
4. Fulton, Z. M. K., Judson, C. F., and Norris, G. W. *Congenital Heart Block Occurring in a Father and Two Children, One an Infant.*
5. *McDonald, E. *The Duration of Pregnancy, with a New Rule for Its Estimation.*
6. Buerger, L. E. *Further Studies of Sarcoma of Bone.*
7. Williams, T. A. *Cases Illustrating the Origin of Hysterical and Pseudo-hysterical Symptoms.*
8. *Orbison, T. J. *Psychasthenic Attacks Resembling Epilepsy.*
9. Packard, F. R. *A Fatality Following the Removal of Tonsils and an Adenoid Growth.*
10. Cooke, J. V. *Metabolism after Parathyroidectomy.*
11. *James, W. B., and Williams, H. B. *The Electrocardiogram in Clinical Medicine. 1. The String Galvanometer and the Electrocardiogram in Health.*
12. Weaver, G. H. *The Effects of Injections of Killed Streptococci.*

1. Henderson describes the actions of digitalis upon the heart as (1) stimulation of the cardio-inhibitory center decreasing rhythmicity; (2) increase in the power of contractility; (3) increase in tonicity; and (4) depression of conductivity. These effects may be exerted more promptly than by the mouth administration of digitalis by the intravenous use of strophanthin. Cases are reported where strophanthin injections were given and systolic and diastolic blood-pressures were followed to determine the work of the heart by Von Recklinghausen's method, but the clinical improvement showed more striking evidence of the effect than the figures supposed to represent heart work. Henderson believes that the intravenous use of strophanthin is of value in giving prompt benefit where any favorable results are to be obtained from the digitalis group of drugs, and that where it fails recourse must at once be had to other lines of treatment.

2. Friedenwald reports 14 cases of digestive gastric hypersecretion as distinguished from continuous gastric hypersecretion. The condition is defined as one where abnormally large amounts of gastric secretion are obtained after a test meal, although the fasting stomach contains but a few cubic centimeters of juice. The great majority of cases occur in men. The symptoms are largely those of gastric neurasthenia, with sense of fullness, eructations and pains, with occasionally nausea and vomiting, rarely heartburn, and usually extreme constipation. Appetite remains good, but marked loss of weight is present in all instances. Succussion is present even after small meals. The amount of stomach contents obtained after a test meal is always large, separating into two layers, — a deep layer of almost clear fluid with below it a comparatively small stratum of solid sediment. Even after a dry test breakfast, large amounts of fluid are withdrawn, but from the fasting stomach little or nothing can be extracted. The condition may be transient or may pass over into continuous hypersecretion. It is undoubtedly of nervous origin, and in treatment attention is to be directed largely to improving the general health and building up the nervous system by rest, hydrotherapy and massage.

3. Sailer reviews the development of our knowledge of pancreatic disease and its present status. Chronic pancreatitis consists of degenerative changes in cells, proliferation of connective tissue and round-cell infiltration, and is accompanied by insufficiency of pancreatic secretion. Clinically cases fall into three classes. (1) Cases with jaundice, distended gall bladder, emaciation, digestive disturbance and changes in secretions and discharges, sometimes with palpable tumor in the region of the umbilicus. (2) Cases where swelling of the head of the pancreas is the chief clinical feature. (3) Cases where the diagnosis cannot be established clinically, but where pancreatitis is suspected either by the surgeon, who detects unusual hardness at operation, or by the physician as a result of symptoms, signs and laboratory tests. The chief symptoms are malnutrition, disturbed digestion with discomfort or actual pain. Numerous tests of pancreatic function have been employed, but their diagnostic value remains unestablished. In treatment benefit has been reported after various surgical procedures, but medical treatment is not to be neglected. This comprises, in addition to general attention to digestion and nutrition, the use of pancreatic extract in glutoid capsules.

5. McDonald calls attention to the lack of accuracy of the prevailing methods of estimating the duration of pregnancy, and proposes a new method for its determination. The duration of pregnancy in lunar months is found to equal the height of the uterus in centimeters divided by 3.5. After the sixth month this rule has been found to be very exact.

8. Orbison refers to the description by Spiller and by Oppenheim of cases which have been diagnosticated either as epilepsy or as hysteria, but do not properly belong to either disease, being simply manifestations of psychasthenia without relation to hysteria or to epilepsy. It is to be recognized that in certain cases of psychasthenia convulsive attacks may occur which are not of grave prognosis.

11. James and Williams describe the string galvanometer and the electrocardiogram in health. The electrocardiogram is a graphic record of electric currents set up by the heart beat as shown by the apparatus of Einthoven. Certain waves are observed with each beat of the heart, the chief one being definitely associated with the contraction of the ventricle. A smaller wave probably results from the contraction of the auricle, and other events occur the significance of which is not yet established, but which serve to give the electrocardiogram of the normal case a characteristic form. [F. W. P.]

### Annals of Surgery.

### September, 1910.

1. *Hunt, J. R., and Woolsey S. *A Contribution to the Symptomatology and Surgical Treatment of Spinal Cord Tumors.*
2. *Stone, H. B. *Intestinal Lesions Produced by Blunt Force.*
3. *Schwyzer, A. *Transgastric Jejunal Feeding.*
4. *Sutton, W. S. *The Proposed Fistulo-Enterostomy of Von Stubenrauch.*
5. Lilienthal, H. *Permanent Colostomy.*
6. Mathews, F. S. *Myeloma of the Long Bones.*

1. Hunt and Woolsey present a very careful study of thirteen cases of spinal cord tumors, of which 6 were extramedullary. Hunt, after a survey of symptoms and signs for localization, gives the thirteen case histories. These are given first in summary, then in detail, and are finally discussed from point of view of diagnosis, symptomatology and localization. They are highly instructive and forcibly impress the significance of the introductory survey. Woolsey then gives the operative technic, the mortality, the after-treatment and the results, immediate and ultimate. Any group of symptoms indicating a progressive focal lesion of the cord is considered suggestive of the possibility of neoplasm. Much attention is given to the differentiation of extra- and intra-medullary tumors. An absolute diagnosis is not always possible owing to exceptions which occur in the symptomatology of either variety. When in doubt, both authors agree that the patient should always receive the benefit of the doubt and be subjected to exploratory laminectomy without undue delay. Spinal cord tumors generally begin with localized pain due to involvement of meninges or more especially the posterior roots, followed after a valuable period by symptoms of gradual impression of the cord (sensory, motor and sphincter disturbances). With some exceptions vertebral and extradural tumors present bilateral root and medullary symptoms, while intradural tumors present unilateral symptoms. Although a zone of hyperesthesia corresponding to the upper level of compression is far from constant, it is a valuable localizing sign, when present. Rigidity of the spine with localized pain and tenderness, so characteristic of vertebral tumors, may also accompany intravertebral growths. The root pains are segmental in distribution and do not, as in true neuralgia, follow the course of nerve trunks, and are of great value in determining the level of the lesion indicating compression of the segment from which the root springs and not of the root in its intraspinal course. In intramedullary tumors root-pains are often absent or insignificant. Loss of pain and temperature sense (dissociated anesthesia) may be en-

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countered in vertebral and extramedullary lesions as well as in central lesions. Atrophic palsies occur in both central and eccentric growths, but atrophy dependent upon extensive longitudinal involvement of the cord accompanied by fibrillary twitchings, especially associated with loss of pain and temperature sense, homolateral and of segmental distribution, is very characteristic of central tumors. In extramedullary tumors of the cervical region Hunt has often observed a distinct girdle sensation at the umbilical or lower thoracic level. Woolsey favors a simple laminectomy, if possible in a modified left Sims' position, always with the part of the spine in question higher than the head and rest of the spine to limit the escape of cerebrospinal fluid when the dura is opened. Urotropin is given before and after operation until wound is healed or until catheterization is no longer necessary. By sight in many cases it is difficult to determine whether the tumor is extra- or intra-medullary owing to the lamellated, edematous condition of the arachnoid over the tumor. This must be incised. At least three successive nerve roots must be divided to produce cutaneous anesthesia. Simple section without suture is practised and advised in all cases of inoperable tumor to relieve pain. The authors' mortality (7 cases) was 14.3%, but, including 2 exploratory operations and 1 case of endothelioma of upper sacral vertebræ, the mortality was only 10%.

2. Stone reports 4 cases of intestinal lesions from blunt force, 3 with rupture and 1 with contusion and bowel paralysis. All were operated immediately upon admission to the University of Virginia Hospital, admission occurring thirty-six to one hundred and one hours after accident. In all cases the small intestine sustained injury. The case of adynamic ileus was in a boy who had been jammed against a gate-post by a charging cow. There was immediate sharp abdominal pain and vomiting. The vomiting soon ceased and did not recur. Belly showed distention without rigidity or marked tenderness, no peristalsis and no free fluid. There was no leucocytosis. Operation showed 14 cm. of contused gut with distended gut above and collapsed gut below. Enterostomy. No drainage. Second operation with mechanical emptying of the bowel after direct application of eserin failed. Third operation, closure of fistula. Recovery. Stone advises exploratory laparotomy in all cases of abdominal blunt injury.

3. Schwyzer reports a case upon which he did a gastro-jejunostomy with a Murphy button and then a small gastrostomy. A catheter was passed through the gastrostomy opening *via* the button into the distal loop of jejunum. Through this tube the desperately ill patient was fed. Vomitus or stomach contents from washings were found to be best tolerated and had the advantage of containing some digestive secretions.

4. Sutton reports a case of persistent biliary fistula upon which was performed the fistulo-enterostomy proposed by Von Stubenrauch, "the first application of this method to the human subject." The operation was found to be feasible, but a failure on physiologic grounds. [T. W. H.]

### The Lancet.

#### Sept. 3, 1910.

1. Gibbons, R. A. *Sterility: its Etiology and Treatment.*
2. *McDonagh, J. E. R. *A Report on Twenty Cases Treated with Ehrlich's Specific for Syphilis.*
3. *McIntosh, J. *On the Influence of the New Ehrlich Preparation, Dioxy-diamido-arsenobenzol ("606") on Recurrent Fever in Rats.*
4. *Tod, H. F. *The Value of Ossiculectomy in Chronic Middle-Ear Suppuration, as a Means of Avoiding the Complete Mastoid Operation.*
5. Upcott, H. *Iso-Hemolysis in Relation to Cancer.*
6. Hall, I. W., Roberts, E. M., and Fletcher, J. *Further Observations upon Typhoid Carriers.*
7. Ingram, A. C. *Rhinosporidium Kinealyl in Unusual Situations.*
8. Clarke, J. J. *A Case of Congenital Coxa Valga.*
9. Jones, R., and Pearson, R. W. J. *A Case of Leprosy in a White Person associated with Insanity.*
10. *Williams, R. N., Murray, H. L., and Runole, C. *Further Researches into the Bacteriology of Epidemic Summer Diarrhea, with Special Reference to the Classification by Absorption of Organisms Isolated belonging to the Paratyphoid B., Suipestifer Group.*
11. Emery, W. D'E. *The Technic of a Simplified Form of the Wassermann Reaction.*
12. Hird, A. E. W. *A Case of Cerebellar Hemorrhage.*

2. McDonagh briefly reports his results with the use of Ehrlich's new preparation for the treatment of syphilis. This drug aims to kill definitely this infecting organism. Over-sensitiveness to arsenic should be tested for, prior to the use of the drug, by a conjunctival test. He describes the technic of injection either intramuscularly or intravenously. In addition to remarkable changes for the better in the condition of the local lesion, he records a great improvement in the patient's general condition.

3. McIntosh reports his experiments with the new Ehrlich preparation "606" on recurrent fever in rats. He concludes from his researches that this is a specific remedy for European relapsing fever.

4. Tod urges ossiculectomy instead of a radical mastoid operation in chronic middle-ear suppuration for the following reasons: (1) A large number of cases can be cured or a radical mastoid operation avoided by this comparatively simple procedure. (2) The large proportion in which a good result is obtained in regard to hearing power by this method. (3) There is slight inconvenience to the patient and only a short period of after-treatment.

10. The writers' have isolated from the feces, heart, blood, etc., of cases dying of epidemic diarrhea two distinct groups of organisms producing diarrhea in puppies. These groups are distinguishable from each other and from the Paratyphoid B. They were not present in the stools of one hundred normal children. [J. B. H.]

#### Sept. 10, 1910.

1. Yearsley, M. *The Duty of the General Practitioner to the Deaf Child.*
2. Starling, H. J. *On the Value of Blood-Pressure Determinations in the Toxemia of Pregnancy.*
3. *McCann, F. J. *Cæsarean Section in the Treatment of Eclampsia Gravidarum, with Notes of a Successful Case.*
4. Goodhart, J. F. *Note on the Central Origin of Some Cases of So-Called Heart Block.*
5. Stott, H. *Enteric Fever Spread by Milk Infection, Probably by Means of a Carrier Case.*
6. Bentall, W. C. *Vesico-Vaginal Fistulæ: A Summary of Twenty-One Cases Operated on.*
7. Stoffel, A. *On the Failure of Nerve Anastomosis in Infantile Palsy.*
8. Burroughs, W. J. *A Case of Chronic Constipation Treated by Faradism of the Large Intestine.*
9. Mummery, P. L., and Bridges, E. C. *A Case of So-Called Chronic Neurasthenia due to Abdominal Adhesions; Operation; Recovery.*

3. McCann is of the opinion that Cæsarean section is the best method of treatment of ante-partum eclampsia. In this condition the best chance of recovery lies in speedy delivery; as Cæsarean section is the quickest method at our disposal, he is in favor of adopting it in all such cases. [J. B. H.]

### British Medical Journal.

#### Sept. 3, 1910.

1. *Bryce, A. *Remarks on Mechanotherapy in Disease with Special Reference to Osteopathy.*
2. Pirie, A. H. *A Lecture on the Interpretation of X-Ray Negatives.*
3. Renner, W. *The Spread of Cancer among the Descendents of the Liberated Africans or Creoles of Sierra Leone.*
4. Neve, E. F. *One Cause of Cancer as Illustrated by Epithelioma in Cashmir.*

#### THE BRITISH MEDICAL ASSOCIATION.

*Section of State Medicine.*

5. Kerr, J., *et al.* *Discussion on the Provision of Medical Treatment of School Children.*
6. *Milne, R. *A Defense of the Home Treatment and Prevention of Scarlet Fever.*

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7. Hogarth, A. H. *The Tuberculosis Problem in Country Areas.*
8. Fremantle, F. E. *Part-time Medical Officers of Health.*
9. Collins, W., *et al. Discussion on the Reform of Death Certification.*
10. Robertson, J., *et al. Discussion on Town Planning in Relation to Public Health.*
11. Reid, G., *et al. Discussion on the Administrative Control of Ophthalmia Neonatorum.*
12. Niven, J., *et al., Discussion on the Etiology and Prevention of Summer Diarrhea.*

*Section on Medical Sociology.*

13. Whitaker, J. S. *Discussion on State Sickness Insurance as affecting the Public Health and the Medical Profession.*

*Section on Odontology.*

14. Mummery, J. H. *Introductory Remarks.*
15. Wallace, J. S. *The Effect of Foodstuffs on the Causation and Prevention of Dental Caries.*
16. Mackenzie, H. *Care of the Mouth during General Disorders.*
17. Underwood, A. S. *The Influence of Climate on Dental Caries.*

1. Bryce comments on osteopathy as he has studied it in England and America. He explains the cause of the benefit often obtained, and urges surgeons to employ some of the rigorous manipulative methods advocated by osteopaths. On the other hand, he deplores the harm that is often done and exposes the absurdity of the osteopath, who attempts to explain all diseases by subluxation and displacements.

6. Milne does not believe in isolating scarlet fever patients. Commencing at the earliest possible moment during the first four days he rubs the child all over, head to foot, with pure eucalyptus oil night and morning; afterwards this is repeated once a day until the tenth day. For twenty-four hours he swabs out the tonsils with 1:10 carbolic oil every two hours. He claims that by this method secondary infections are unknown, that isolation is unnecessary, and that this method is vastly more economical. [J. B. H.]

Sept. 10, 1910.

*Educational Number.*

There are no original articles or addresses in this number. [J. B. H.]

Deutsche Medizinische Wochenschrift. No. 36.

Sept. 8, 1910.

1. Kröner, P. *The Justification of Pubiotomy.*
2. Hofbauer. *Toxemia of Pregnancy.*
3. Ridder. *Essay on the Knowledge of Bronze Diabetes.*
4. *Fleischer, F., and Takeda, K. *The Clinical Value of the Pinoff Levulose Reaction in the Urine.*
5. Fraenckel, P., and Hochstetter. *Origin of Leucocytosis.*
6. Lowenstein, E. *Results of Tuberculin Treatment on 682 Cases of Open Pulmonary Tuberculosis.*
7. Block, W. *Normal Position of the Heart and its Clinical Importance.*
8. *Tornai, J. *The Influence of the Momburg Constriction on the Heart and Vessels.*
9. Pertik, J. *Sahli's Pantopon.*
10. Görges. *A New Combination of Iron and Iodide, "Eisensajodin."*
11. Katz, W. *The Treatment of Granulating Wounds with Amido-Azotoluol Salve.*
12. Bassenge, R., and Selander, E. *The Disinfecting Effect of a Few Common Tooth Pastes.*
13. Herrmann. *The Incisor.*

4. Fleischer and Takeda have taken up and studied the test for the detection of levulose in the urine as suggested by Pinoff in 1905. They tried it out on a number of cases and concluded that it was a sharper reaction than the Seliwanoff reaction, but not absolutely reliable, as the result was positive in certain cases where there was no levulose. They hope eventually to find what other substances besides levulose will give the reaction.

8. Tornai warns against the use of the Momburg constriction belt in any except the most suitable cases as he has seen poor results in cases that show any lesion of the heart or kidney. Also in Basedow's disease and plethoric individuals he does not think this method should be used as death may result. [C. F., Jr.]

Berliner Klinische Wochenschrift. No. 37.

Sept. 12, 1910.

1. Klotz, M. *The Theory of the Oatmeal Cure for Diabetes.*
2. Michaelis, L. *One Hundred and Ten Cases of Syphilis Treated by the Ehrlich-Hata Method.*
3. Kromayer. *A More Convenient and Painless Method of Injecting Ehrlich's Anti-Syphilitic Preparation.*
4. Oestreich, R. *A New Attempt in the Treatment of Cancer.*
5. Krause, M. *An Arrow Poison of German East Africa.*
6. Most. *Fracture of the Rib with Intercostal Neuralgia.*
7. Schultz, R. *Severe, Chronic Spasm of the Colon.*
8. *Chrzelitzer. *The Use of Protargol in Warm Solutions.*
9. Grabow. *A Case of Remarkably Large Sarcoma of the Pleura with Calcification, following Primary Sarcoma of the Tibia.* (Conclusion.)
10. Evler. *Early Symptoms and the Serum Treatment of Tetanus.* (Conclusion.)
11. Kuttner, O. *Problems and Results of the New Zoölogical Investigations.*

8. The author has found that he has obtained much better results both in the abortive treatment of gonorrhea and in the treatment of chronic cases by using protargol 0.5% to 3% at a temperature of about 115° F. than by the use of the same injections at normal temperature. He gives his reasons and describes his technic. He lays emphasis on the fact that the protargol must be freshly prepared as it degenerates very rapidly. [J. L. H.]

## Miscellany.

### EHRLICH'S NEW PREPARATION (606) IN THE TREATMENT OF SYPHILIS.

Dr. Henry W. Cattell recently spoke before the Philadelphia County Medical Society on the technic used in Wechselmann's wards of the Virchow Hospital in Berlin for the treatment of syphilis with Ehrlich's Preparation "606" and said: I saw towards the end of July five injections given with "606," and had the opportunity of examining about 100 cases in all so treated.

Our knowledge in regard to syphilis has been increased by:

(1) The discovery of the active agent by Schaudinn and Hoffmann.

(2) The diagnosis of the poison by means of the Wassermann reaction or one of its various modifications.

(3) The inoculation of apes, rabbits and guinea-pigs with syphilis.

The capsule containing the yellowish compound, diamidade-oxyarsenobenzene, is broken and collected in a sterile mortar and dissolved in 1 to 2 ccm. of *concentrated* sodium hydrate. Methyl alcohol is no longer employed. After solution has taken place the preparation is again precipitated by the addition of *glacial* acetic acid. Fifteen to 20 ccm. of sterile water are added, and the whole centrifugated, the supernatant water poured off, more water added, and the whole

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brought to neutral by either the addition of a decinormal solution of sodium hydrate or of a 1% solution of acetic acid. The dose used at the time I was in Berlin was 0.5 to 0.6 gm. for an adult and 0.025 gm. for a babe. The preparation is injected in a large syringe beneath the scapula in an area which has first been painted with iodine. One of the strong reasons for choosing the subscapular region is that, in case of arsenicalism, the location is easy of access surgically. A lump is formed which requires some time to disappear. The injections are sometimes followed by pain, fever or malaise, immediately afterwards or coming on after several days. The oldest case of inoculation is now between eleven and twelve months, and Ehrlich must have now nearly 8,000 records, 7 deaths, of treated cases. It is perfectly marvelous to see a patient come into the wards with pronounced evidences of the disease, and to observe the immediate improvement after treatment. The spirochetes begin to disappear the first day, and in forty-eight to seventy-two hours they are no longer to be found. The Wassermann may, however, remain positive for several weeks.

A test similar to that employed in the Calmette or Von Pirquet reaction must always be made to determine whether or not the patient has been treated before by arsenic or is peculiarly susceptible to the drug. Ehrlich insists that everybody before being inoculated should have the eyes examined and to see that there are no complications like grave heart or kidney disease present. This mode of treatment has been done by the best observers that Europe affords, and has been undertaken under control conditions, such as have never existed before. The results so far have been perfectly astonishing, though I saw three cases in Wechselmann's hands which had returned for a second treatment. The reason given for this was that these were some of the earlier cases in which too small a dose had been administered.

The users of this remedy are so enthusiastic that they advise it in practically every case. In one of the wards there were no less than ten syphilitic babies suffering from every manifestation of inherited syphilis.

## Correspondence.

### CLEAN SWEET MILK AND "VOTES FOR WOMEN."

Boston, Oct. 1, 1910.

*Mr. Editor:* Some days ago I received, as doubtless did many other Massachusetts doctors, a number of highly illuminated cards advocating "clean, sweet milk" and "votes for women." At first thought these two principles seemed to have about as much in common with each other as either would with protection or free trade. But further consideration suggests that there may be a connection, after all, between healthful milk for babes and woman's vote, inasmuch as the domestic woman is rather more likely than her ballot-seeking sister to provide the best food for babies from her own fountains. I have indeed been led to question whether the best product of the lacteal glands was secured when they covered the beating heart of a militant suffragette.

So I replied briefly, in the self-addressed envelope that accompanied the literature, that I did greatly favor clean, sweet milk but *not* votes for women. I have just received the enclosed reply, which for clear, cogent reasoning and delightful English would be hard to equal:

"Dr. —

"*Dear Sir:* For your semi-indorsement of my efforts in behalf of Hygiene Milk I am grateful. Please do not do it again, I will forgive you this time.

"Sir, I am really shocked at your inconsistent inference that it would be possible for a woman, backed with the authority of the United States federal government to supervise the production and protection of milk, to contaminate it to any higher degree of efficiency to kill than is done to-day by a man. Its very, very high degree of efficiency to kill is attested by the Boston Health Board's report that fifty-one babies in the city of Boston died during the month of July, 1910, in access of the number in July, 1909.

"Sir, no acknowledgment or reply is required to this note until the scales have been removed from your callous conscience, by the torture and the filling of a permature grave of a dear one to you.

"In consequence of a diet upon a concentrated stewed solution of dirt, tubicolous and bacterial germs.

"Doctor, you may be skillful and in the full possession of the knowledge of medical science.

"Kindly accept the following from a layman, that combined brand of the dairy and milkman's indifference known as the undertakers' delight, that has been supervised by a man often, from the viewpoint of the quality and courtesy of the dairyman's whiskey and cigars is a master piece of production warrented to kill, when taken as a food and is far, far from the scope of known medical science to combat.

"Doctor, pull yourself together, this world moves. Respectfully, ———, Champion of Clean, Sweet Milk, Its production and protection supervised by a woman, backed by the authority of my uncle Samuel of Washington, District of Columbia, United States of America."

Yours truly,

"X."

### "THE PATIENT TO THE DOCTOR."

Boston, Oct. 3, 1910.

*Mr. Editor:* For fear you might not otherwise see it, I cannot refrain from sending you this bit of verse, from a recent number of the *Century*, which seems to me thoroughly charming. Its author, Harold Witter Bynner, who has a peculiarly winning and graceful talent, is perhaps best known for his "Ode to Harvard." Since William E. Henley's "Hospital Verses," little medical verse of genuine poetic value has been written. These lines of Mr. Bynner's, though perhaps hardly in the same category, have a very sweet human touch to which the profession should not be insensible. If you feel disposed to reprint them, I hope they may give your readers as much pleasure as they have me.

Very truly yours,

Robert M. Green, M.D.

The Patient to the Doctor.

[Witter Bynner in the *Century*.]

Name me no names for my disease
With uninforming breath;
I tell you I am none of these,
But homesick unto death, —

Homesick for hills that I had known,
For brooks that I had crossed,
Before I met this flesh and bone
And followed and was lost.

Perhaps it broke my heart at last,
But name no name of ills;
Say only, "Here is where he passed,
Seeking again those hills."

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## RECORD OF MORTALITY

For the Week ending Saturday, Oct. 1, 1910.

| Cities. | Reported deaths in each. | Deaths under five years. | Cities. | Reported deaths in each. | Deaths under five years. |
|---|---|---|---|---|---|
| New York | 1,273 | 418 | Waltham | 9 | 1 |
| Chicago | 575 | 186 | Pittsfield | 11 | 4 |
| Philadelphia | — | — | Brookline | 7 | 1 |
| St. Louis | — | — | Gloucester | 6 | 1 |
| Baltimore | — | — | North Adams | 2 | 1 |
| Cleveland | — | — | Northampton | 3 | 0 |
| Buffalo | — | — | Chicopee | 4 | 0 |
| Pittsburg | — | — | Medford | 2 | 1 |
| Cincinnati | — | — | Beverly | 5 | 1 |
| Milwaukee | — | — | Leominster | 1 | — |
| Washington | — | — | Hyde Park | 3 | 1 |
| Providence | — | — | Melrose | 5 | 2 |
| Boston | 218 | 72 | Newburyport | 2 | 2 |
| Worcester | 57 | 15 | Revere | 4 | 1 |
| Fall River | 38 | 15 | Westfield | 5 | 3 |
| Cambridge | 37 | 6 | Woburn | 7 | 4 |
| Lowell | 26 | 13 | Peabody | — | — |
| New Bedford | 30 | 15 | Marlboro | 1 | 0 |
| Lynn | 24 | 8 | Attleboro | 1 | 0 |
| Springfield | 22 | 5 | Adams | 1 | 1 |
| Lawrence | 25 | 11 | Clinton | 4 | 2 |
| Somerville | 12 | 2 | Gardner | 5 | 2 |
| Brockton | 18 | 6 | Milford | — | — |
| Holyoke | 14 | 6 | Watertown | — | — |
| Malden | 14 | 3 | Plymouth | — | — |
| Chelsea | 16 | 1 | Southbridge | 1 | — |
| Newton | 8 | 3 | Weymouth | — | — |
| Salem | — | — | Framingham | — | — |
| Haverhill | 9 | 1 | Wakefield | — | — |
| Fitchburg | 11 | 2 | Webster | 4 | 2 |
| Everett | 3 | — | Arlington | — | — |
| Quincy | — | — | Greenfield | 2 | 0 |
| Taunton | 15 | 7 | | | |

## LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND OTHER OFFICERS OF THE PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDED SEPT. 28, 1910.

Williams, L. L., surgeon. Leave of absence for seven days from Sept. 19, 1910, amended to read three days from Sept. 19, 1910, under paragraph 189, Service Regulations.

Gardner, C. H., surgeon. Leave of absence for one month from Sept. 1, 1910, amended to read twenty-two days from Sept. 1, 1910.

Sprague, E. K., surgeon. Granted one month's leave of absence from Sept. 28, 1910.

Rucker, W. C., passed assistant surgeon. Relieved from duty in connection with the suppression of plague in California, and detailed for temporary duty in the Bureau, effective Sept. 22, 1910. Sept. 23, 1910.

Creel, R. H., passed assistant surgeon. Detached from U. S. R. C. "Tahoma" and ordered on shore duty at Unalaska, as fleet surgeon. Aug. 9, 1910.

Guthrie, M. C., passed assistant surgeon. Granted one month's leave of absence from Oct. 1, 1910.

Hunt, Reid, professor, chief division of pharmacology, Hygienic Laboratory. Detailed to attend the Second International Conference for the Study of Cancer, to be held in Paris, Oct. 1–5, 1910, and the Conference of the International Anti-Tuberculosis Association, to be held in Brussels, Oct. 5–8, 1910. Sept. 22, 1910.

Porter, Joseph Y., quarantine inspector. Granted thirty days' leave of absence from Sept. 20, 1910.

Barnes, W., acting assistant surgeon. Granted thirty days' leave of absence from Oct. 5, 1910, with pay, and one month's leave of absence from Nov. 5, 1910, without pay.

Clark, E. S., acting assistant surgeon. Granted thirty days' leave of absence from Sept. 13, 1910.

Clerborne, A. B., acting assistant surgeon. Granted seven days' leave of absence from Sept. 24, 1910, under paragraph 210, Service Regulations.

Gill, S. G., acting assistant surgeon. Granted one day's leave of absence, Sept. 17, 1910, under paragraph 210, Service Regulations.

Kimmet, W. A., acting assistant surgeon. Granted thirty days' leave of absence from Sept. 25, 1910.

Rush, John O., acting assistant surgeon. Granted ten days' leave of absence from Sept. 24, 1910, without pay.

Schuster, B. L., acting assistant surgeon. Granted one day's leave of absence, Sept. 10, 1910.

Stuart, A. F., acting assistant surgeon. Granted thirty days' leave of absence from Oct. 1, 1910.

Wakefield, H. C., acting assistant surgeon. Granted fourteen days' leave of absence from Oct. 10, 1910.

Scott, E. B., pharmacist. Granted five days' leave of absence from Sept. 15, 1910, under paragraph 210, Service Regulations.

Ryder, L. W., pharmacist. Granted four days' from Aug. 24, and thirteen days' from Sept. 1, 1910, extension of leave of absence on account of sickness. Granted seven days' leave of absence from Sept. 14, 1910, under paragraph 210, Service Regulations.

## PHYSIOLOGICAL SEMINAR.

Prof. W. T. Porter will give a physiological demonstration and an informal lecture every Monday and Thursday afternoon in the Harvard Medical School, room 352, Building C, from five to six o'clock.

## ERRATUM.

Attention has been called to the fact that in the index of this Journal, vol. clxii, the page number referring to the article "Infantile Paralysis, Methods of Treatment" is incorrect. The number of the page should be 881.

## SOCIETY NOTICES.

New England Hospital Medical Society. — The New England Hospital Medical Society will hold its regular meeting Thursday, Oct. 20, at the Kensington Chambers, Room 201, corner Boylston and Exeter streets, Boston. Dr. Agnes C. Vietor, chairman. Subject: Gall-Bladder Disease. Papers: (1) "The Pathology of the Gall Bladder," (2) "The Diagnosis of Gall Bladder," By Agnes C. Vietor, M.D. (3) "The Surgical Treatment of Gall Bladder." By James G. Mumford, M.D.

Dr. Blanche A. Denig,
*Secretary.*

New York and New England Association Railway Surgeons. — The twentieth annual session of the New York and New England Association Railway Surgeons will be held at the Hotel Astor, Broadway and 44th Street, New York City, on Nov. 3–4, 1910, under the presidency of Dr. L. M. Bingham, of Burlington, Vt. Dr. John B. Deaver, of Philadelphia, will deliver the "Address on Surgery," on Nov. 3, at 12 o'clock. A cordial invitation is extended to railway officials, railway surgeons and to the medical profession to attend this session of the association.

Geo. Chaffee,
*Corresponding Secretary.*

## RECENT DEATHS.

Dr. J. Miller Hinson, of Brookline, Mass., who died at Saratoga, N. Y., on Oct. 4, was a graduate of the Hahnemann Medical College of Philadelphia. He is survived by his widow and by one son.

Dr. Cornelius Gilman Trow, who died last week at Sunderland, Mass., was born in Buckland, Mass., in 1847, the son of a physician. He graduated from Amherst College in 1870 and subsequently studied medicine at the New York College of Physicians and Surgeons. In 1872 he settled with his father at Sunderland, where he continued in practise till his death. He served for many years as chairman of the local school committee and as trustee of the public library. He was a Fellow of The Massachusetts Medical Society. Dr. Trow was twice married, but leaves no children. His widow survives him.

Dr. Rudolf Chrobak, who has recently died at Vienna, was born at Troppau, in Silesia, on July 8, 1843. He received his doctorate of medicine from the University of Vienna in 1866, and in 1880 was made Professor of Obstetrics and Gynecology. Since 1889 he has been at the head of the Second Obstetrical Clinic in Vienna. He was a prolific writer on subjects in the field of his specialty.

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WALTER E. FERNALD, M.D. . . . *Lecturer in Mental Diseases*
EDWARD L. TWOMBLY, M.D. . . . *Instructor in Clinical Gynecology*
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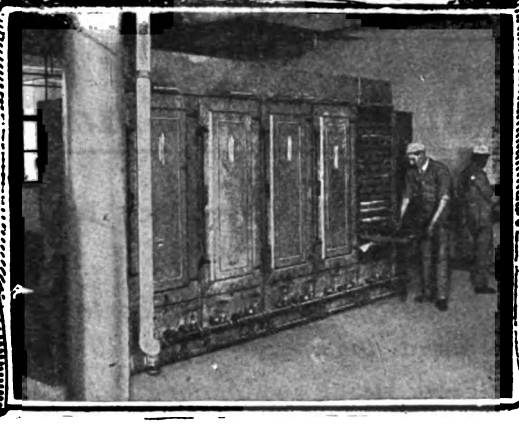

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# *A Few Reviews of*

# Goldthwait, Painter & Osgood's Diseases of the Bones and Joints

have been published. They are unanimous in their statement that the book is of exceptional value, that it is original, and that the purpose of the authors plainly set forth has been well accomplished.

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Although the authors in their preface disclaim any intention of writing a book on orthopedic surgery, this book is written with a remarkable breadth of view, and in a most scientific manner, and sums up well the modern knowledge on this branch of medicine. There is a marked absence of " canned material " from the book, which is most refreshing, the pathology is up to date and unusually good, and the differential diagnosis of the various diseases, except that of Potts' disease, is excellent. The chapter on osteomyelitis is far better than that on the same subject in most surgical textbooks, and those on tuberculosis of the smaller joints, the treatment of hip disease, and the technic of operations on tuberculous joints are all very well done, also that on pelvic articulations. The illustrations are numerous and clear, and made clearer by the notes that accompany them. It is evident throughout the book that the authors have studied their joints, and whenever it is possible they prove their case. The inclusion of a large number of histories is somewhat of a new departure. — *The Medical Record.*

---

The authors have entitled the book " Clinical Studies," perhaps to disabuse the minds of those who might expect a " textbook " along the old lines, and they offer these studies primarily " to those practitioners of medicine to whom sufferers from joint disease usually make their first appeal." This does not mean that the book is elementary in its scope. It represents, on the contrary, a large part of the experiences, deductions and also results of original investigations of three busy men handling annually a large amount of clinical material. But as the style of presentation is up to what we expect from Boston, this is a work which can be read from cover to cover by any medical man. * * *

As a whole, the volume stands as a contribution of science to humanity. Its pages not only show a spirit of aiding the cripple, but also breathe patriotic and humanitarian desires to help the nation and the race. It will awaken an interest in bone and joint diseases that, so far, has been dormant in many. It is another solar-plexus blow to the diagnosis " rheumatism." It should be read by every one who has treated, does now treat, or ever expects to treat, a case of bone and joint disease or disability. — *The Journal of the Minnesota State Medical Association.*

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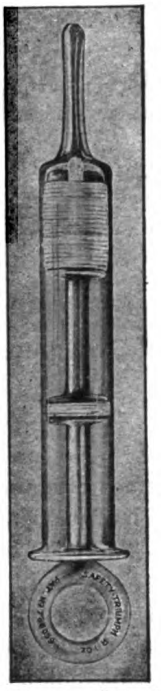

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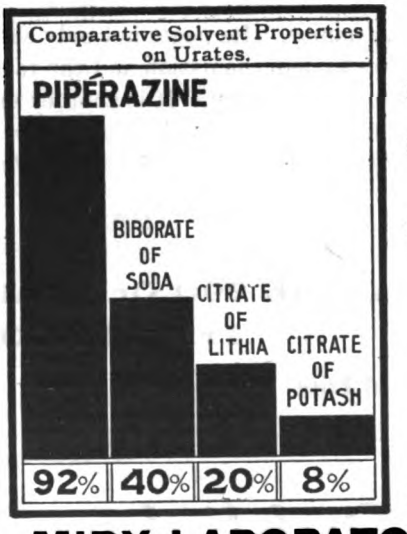


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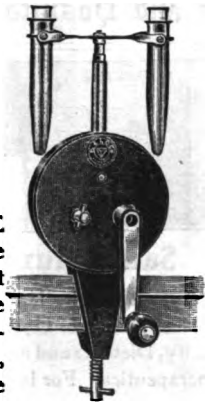

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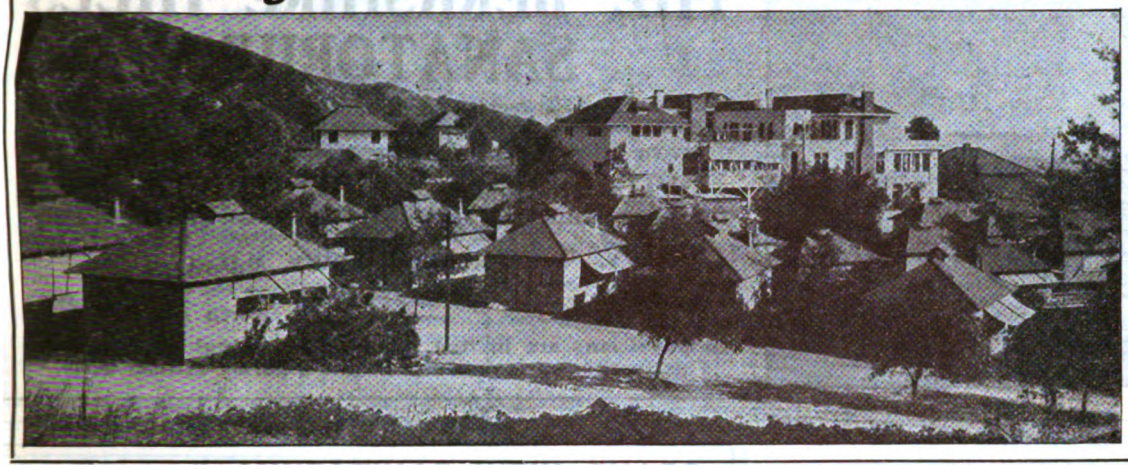

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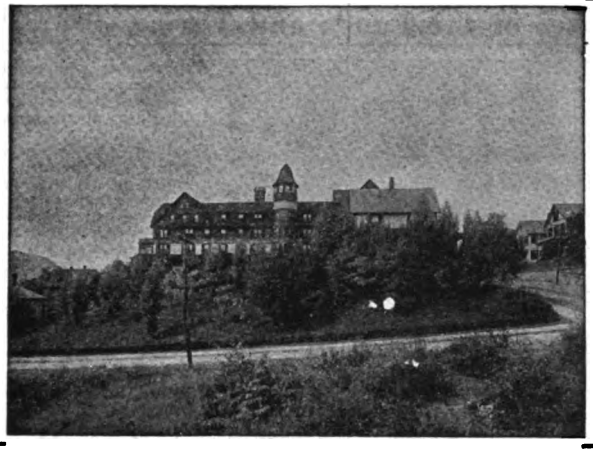

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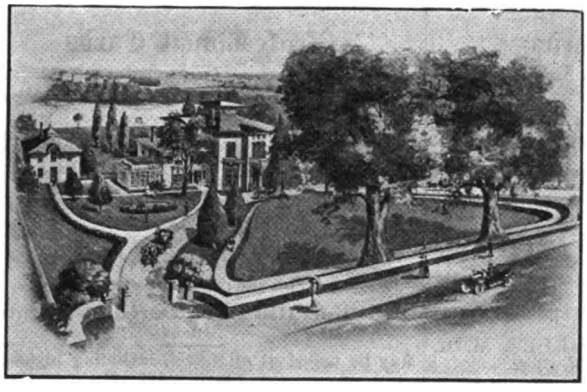

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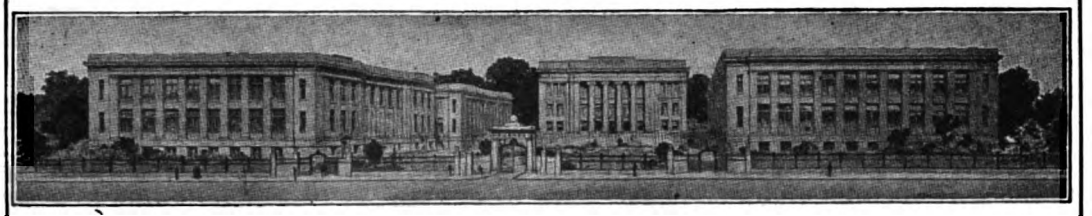

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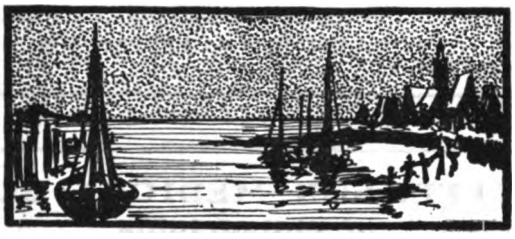

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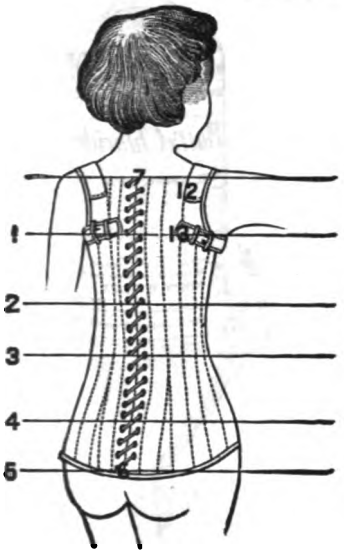


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## Original Articles.

# THE TECHNIC OF ARTHROTOMY. A REPORT UPON AND DISCUSSION OF ONE HUNDRED AND NINETY-EIGHT CASES.

BY CHARLES F. PAINTER, M.D., AND ANDREW P. CORNWALL, M.D., BOSTON, MASS.

(From the Orthopedic Clinic of the Carney Hospital.)

For many years the surgical profession have been loath to interfere with pathologic or traumatic conditions located within the larger articulations.

The reasons for this have been the dangers of sepsis and the fear that permanent damage might be done to an articulation by the extent of the incision.

With the development of greater perfection in surgical technic the first of these fears has been, to a certain extent, eliminated. The fear of inflicting permanent injury upon a joint through the weakening of its capsule is still a deterring factor in the minds of many surgeons. The fact that sepsis has occurred in a certain small percentage of cases, perhaps not more frequently, however, than it occurs in other surgical wounds, and the fact that many of the conditions for which an arthrotomy might be and usually is performed are those which do not permanently endanger life or limb, there have been good grounds for the exercise of conservatism in the matter of arthrotomy. It certainly should be considered seriously, when contemplating a major operation upon a joint, whether the object which it is sought to accomplish by the procedure justifies the assumption of a risk which no one would hesitate to assume were the condition which one was seeking to relieve a mortal one, but might hesitate about when not of such gravity. The general surgeon has doubtless been justified in his conservatism about the operative treatment of joint lesions. Many of them, however, though they do not menace life directly, do seriously handicap, either temporarily or permanently, the individual who possesses them from attaining his highest efficiency as well as preventing him from enjoying the free use of his joints.

It, therefore, seems that if surgical technic as it has become perfected can attain the results that it sets out to accomplish in the treatment of joints, and if the skill with which such procedures can be carried out has reached a sufficient degree of perfection to minimize the risks over what they have been during the past ten years, it is justifiable now to undertake surgical procedures which formerly would not have been justified.

It is for the purpose of demonstrating the risks which attend arthrotomies on the large joints, and to describe methods which have yielded measurably satisfactory results, and to outline the conditions in which arthrotomy offers its most favorable prospects of success that the statistics which are contained in this paper have been compiled. The paper will be incomplete, in that it will not touch many things which fall to the lot of one who is dealing with joint surgery. Except for the pathological conditions which will be brought to light in the class of cases which are noted as exceptional in this paper, the methods of attacking the problem, viewed from a surgical standpoint, will be practically the same.

It is also the purpose of this paper to lay stress upon the importance of post-operative treatment in all cases of arthrotomy, because the success of an operation is quite as much dependent upon the skill with which the joint is managed afterwards as it is upon the judgment which determined upon the operation and the skill which carried it to its completion.

The cases have been grouped according to their pathology, and a brief description of the conditions operated upon is all that it seems necessary to give, mainly with a view to investigating the length of time that it was necessary to confine the patient to bed and to the hospital, the rapidity with which normal mobility in the articulations could be secured and the permanancy, where it has been possible to determine it, of the result which was obtained.

These have been the points which we have sought to elucidate in abstracting these histories.

Before each group is outlined the technic of the surgical procedure is described for the particular group of cases which is to succeed. This technic, of course, differs but little for the different pathological conditions which are described.

The first group to be discussed are the joint lipomata, and under this head are included the "solitary lipomata" described by Koenig, the hypertrophied alar ligament fringes which are traumatic fibrolipomata, and the diffuse lipomata which usually represent merely the deposition of fat in the subsynovial tissues as a result of a fatty infiltration, occurring most commonly in persons given to adiposity. The technic of the preparation of these cases and the surgical procedure itself will be next outlined.

### JOINT LIPOMATA.[1]

*Technic of Operation.*

Routine twenty-four-hour preparation of knee. Shave the leg and thigh with a wide margin on both sides of the joint. Scrub with green soap (coarse mitt). Follow this with (*a*) permanganate of potash, (*b*) oxalic acid and (*c*) corrosive (1–3,000). Weak corrosive poultice over the night previous to operation.

Strict aseptic precautions should be exercised in the operating room. Twelve-hour dressing removed from knee, nurse scrubs leg from mid-thigh to mid-calf four minutes with soap and water, Harrington's solution two minutes, corrosive two minutes, after which procedure nothing should come in contact with the knee except that which has been previously sterilized or rendered aseptic. Tourniquet then applied about upper thigh. Depending upon location of tumor, an incision is made about 8 cm. in length, parallel to either outer or inner border of patella. Skin flaps dissected back. Same procedure with

[1] The knee is taken because it is the joint most often concerned.

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fascia and adipose tissue, exposing capsule. Latter opened longitudinally and retractors employed to hold cut edges apart. Tumor mass with very thin synovial covering usually protrudes through the capsular opening. Attachment of lipoma then sought out and examined. If very vascular, it should be tied off and then the pedicle may be cut as close as possible to its attachment, thus removing the lipoma from the joint *in toto*. If bleeders are present, they should be tied off with chromic catgut. Joint is inspected and palpated to the satisfaction of the operator. It may be advisable to make a similar incision on the opposite side of the joint for the purpose of a thorough examination. This does not add to the gravity of the case nor interfere with the progress of recovery. The joint cavity should then be irrigated with about two quarts of hot normal salt solution or sterile water. The edges of the capsule are next approximated and sutured with interrupted chromic catgut. Fascia brought together in a different longitudinal plane and sutured with continuous catgut. Skin closed with subcutaneous silkworm gut or continuous plain catgut. Dry sterile dressing and bandage applied. A seton drain may be left in the joint at the lower end of the incision for forty-eight hours. Care should be exercised not to insert anything but the gloved fingers into the joint, all manipulations being carried out with instruments alone if possible.

*Routine After-Treatment.*

The administration of 15 to 20 gr. of urotropine per day should be commenced forty-eight hours before the operation and continued for four to five days after.

The treatment of post-operative pain and the bowels should be governed largely by the indications in the individual case. Our routine has usually been to give ⅙ gr. of morphia subcutaneously before the patient has come out of ether. The bowels ought usually to be opened by a saline the night after the operation.

Patient should remain in bed at least one week.

Stitches removed and passive motion begun on the eighth day.

The arc of motion should be increased daily, and as a rule 90° may be obtained on the fourteenth day, at which time hot fomentations are ordered twice a day, with massage to thigh and calf. When 90° of motion is obtained, the patient may be allowed to bear weight on the leg.

Stimulation (hydrotherapy and massage) is kept up as long as indicated. Flannel bandage worn from ankle to mid-thigh for one month.

The following cases are grouped according to their pathology and clinical diagnosis for the sake of convenience in describing their surgical treatment.

LIPOMATA.

(Female Cases.)

Case 1. M. C., female, twenty-one, single. Operation, May, 1902.

Five-inch incision over outer side of left knee. Lipoma found attached to top of external condyle of femur and around the margin of the supra-patellar pouch. Blood supply from the periosteum through numerous small capillaries. Bleeding was checked with hot water. Capsule closed with silk sutures. Recovery was uneventful.

Case 2. S. C., female, twenty-two, married. Operation, June 23, 1902.

Semilunar incision made over inner aspect of right knee. A sessile tumor was found which varied in color from a gray to brownish-white. Also several short finger-like processes were found, all attached by short pedicles. That portion of the tumor mass which habitually came between the apposing bony surfaces was tough and fibrous in nature.

The leg was put up in a plaster of Paris cast in a position of slight flexion for three days.

Motion of knee was normal on the twelfth day. A slight increase in the size of the joint is present, however, and is possibly due to weight-bearing before it was indicated.

Recovery was uneventful. Discharged July 5, 1902.

Case 3. M. C., female, thirty-two, married. Operation, Feb. 13, 1903.

Left knee. The pedicle of the lipoma extended so far to the inner side of the joint that it was necessary to open on both sides of the patella. The lipoma was situated in the lower, outer portion of the joint and attached to the synovia posteriorly. A small part of the pedicle was not excised, and difficulty was encountered in checking the oozing.

Posterior wire splint used. On the thirteenth day 50° of motion was obtained, with pain. On the sixteenth day fluctuation was obtained on either side of the patella. Patient complained of some pain and tenderness, but there was no local or general temperature. Condition probably represented a recurrence of oozing into the joint from passive motion, too much forced. Four days later, under anesthesia, joint was opened and about 150 ccm. straw-colored fluid obtained containing a small amount of fibrin. Culture negative. Wound was closed tightly. Stitches were removed on the fifth day and routine post-operative treatment again instituted, with subsequent rapid recovery of normal function.

Case 4. A. A., female, twenty-six, married. Operation, March 4, 1903.

Incision made over outer side of right knee. Membrane of joint was normal in that portion where fringes are usually present. A small mass, size of silver dollar, was found in the upper outer portion of the joint cavity, punched out in appearance and difficult to distinguish from the wall of the joint. It resembled cicatricial tissue, suggesting a former infectious condition. Seven days later the patient had an attack of tonsillitis of three days' duration, which was accompanied by some pain and tenderness in the knee-joint.

Post-operative treatment was delayed somewhat owing to the above-mentioned infection.

Case 5. E. G., female, thirty, single. Operation, March 13, 1903.

Incision made over outer side of left knee. When capsule was opened the lipoma was immediately exposed to view and very easily removed. Patient had completely recovered in eighteen days and has had no return of symptoms up to present time (1909).

Case 6. C. F. H., female, sixteen, single. Operation, March 20, 1903.

When left knee was opened about an ounce of fluid was obtained. Numerous hypertrophied fringes were found throughout the joint, and were remarkable for their extreme vascularity. All the large vessels were tied with silk, yet considerable difficulty was experi-

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enced in controlling the hemorrhage. Plaster of Paris bandages applied with the leg in extension.

The night following the operation, temperature rose to 102°; pulse, 120; respiration, 30. Complained of some pain in knee. Temperature and pulse remained around this point for three or four days, and the condition indicated the "lighting up" of an infection already present rather than the introduction of infection at time of the operation.

Stitches at lower angle of the wound were removed on the fifth day and considerable pus with bloody fluid escaped. Wick was inserted under anesthesia. Two days later a staphylococcus culture was obtained from the discharge. Wound was irrigated daily and wick reinserted. A few days later it was found necessary to open entire wound and irrigate the joint throughly. The edges were then only roughly approximated with silkworm gut. On the ninth day the appearance of the wound had improved and general septic symptoms had subsided. Improvement continued up to the twenty-sixth day. Sinus closed in rapidly and was immediately followed by sudden rise of temperature similar to preceding attack. Under anesthesia sinus again opened and 2 oz. of bloody fluid was evacuated from a pocket, following which procedure sinus again began to close and purulent discharge changed to a simple serous ooze. Granulations required several applications of silver nitrate. On the forty-fifth day 90° of motion was easily obtained under anesthesia, followed by an increase in discharge of bloody fluid from sinus and considerable pain.

Patient discharged home on the fifty-seventh day after the first operation. Instructed to continue regular post-operative treatment and report for another manipulation in ten days. No pain at that time but only 15° voluntary motion.

Good function had been secured two years after the discharge from the hospital.

Case 7. M. D., female, forty-three, married. Operation, May 27, 1903.

When joint was opened several small purple fringes were found, also bony exostoses situated on the edge of the articular aspect of external femoral condyle, all of which were removed. Suprapatellar pouch closed by adhesions and joint cavity very small. Pre-operative diagnosis, osteo-arthritis of right knee and ankle. Convalescence normal. Discharged July 6, 1903. Stay in hospital prolonged by ankle condition.

Case 8. M. A. L., female, forty-seven, married. Operation, Sept. 16, 1903.

Incision over outer side of knee-joint. One large lobulated lipoma (size pigeon's egg) was found immediately under the capsule. Removed.

Convalescence rapid and uneventful.

March 27, 1905, excellent functional result.

Case 9. H. K., female, twenty-six, single. Operation, Sept. 20, 1903.

When the capsule was opened, numerous lipomatous villi were found scattered over the anterior aspect of the joint, most of which were removed.

Discharged Oct. 6, 1903. Motions of knee normal, but slight tenderness persisted for some weeks.

Case 10. E. M. F., female, twenty-seven, single. Operation, Oct. 14, 1903.

Incision made over both sides of right knee. Capsule thickened and several lipomatous fringes were found situated under the patella, patellar tendon and on the posterior wall of the joint, all of which were removed with scissors. Left knee opened and a similar although less marked condition found. Ten days later patient had slight temperature, but no knee symptoms. At the same time she had irregular catamenia.

Oct. 24. Right knee swollen and edematous, but there is no marked tenderness or surface temperature.

Oct. 26. Temperature 101.2° with increasing tenderness. Under anesthesia right knee was opened and 4 oz. of yellow fluid was evacuated containing some blood clots. Knee was thoroughly irrigated and wick left in lower angle of wound.

Culture negative. Left knee manipulated at same time.

Oct. 28. Right knee again opened, this time on each side, and wick passed through the joint. No pus found.

Patient underwent a vaginal examination. Suspicion of a Neisser infection could not be verified by microscope.

Nov. 3. Ulcer between buttocks.

Nov. 11. Patient vomited several times. Abdomen was distended and very tender. Temperature normal.

Nov. 12. Ulcer very angry looking. Abdomen examined and diagnosis deferred by surgeons. Advised K. I. gtts. x, t. d., in increasing dosage.

Nov. 16. Recurrence of vomiting. Slight tenderness over gall bladder. Edema of abdominal wall. Knee condition markedly improved.

Nov. 22. Patient coughing and expectorating a white sputum. Negative tubercle bacilli, but hypostatic condition present in the lungs.

Nov. 26. Plaster of Paris applied to right leg to allow patient to lie on side, owing to lung condition. Motion of left knee quite free and painless. Ulcer over buttocks very much improved.

Dec. 6. Patient has complained for several days of pain in the right knee, over external condyle. No objective symptoms present, however.

Dec. 31. Both knees can be flexed to a right angle. A second small ulcer has made its appearance upon the buttocks. Old ulcer at a standstill. Patient has been up and about on crutches.

Jan. 5, 1904. Began this morning to have discharge from right knee. Subluxation has been gradually increasing for past six weeks resulting in genu valgum deformity. Ulcers on buttocks have been suspected of being of an atypical specific nature. Antisyphilitic treatment instituted.

Jan. 19. Patient in poor general condition. Urine shows numerous hyalin and granular casts.

March 28. Patient has continued in about the same condition since last note. Has had several exacerbations in the knee which would clear up in a few days.

April 1. Discharge from soft parts under popliteal space and from upper calf. Incision made over abscess and about ½ oz. of green pus evacuated.

April 5. Leg amputated 7 inches above knee, by Dr. J. C. Munro.

April 28. Patient doing well to date, but slight discharge from inner side of stump noted to-day. Staphylococcus aureus culture.

May 1. No discharge noted to-day.

May. 25. Discharged home using crutches. General condition fair.

Dec. 1, 1909. Using artificial limb and gets about fairly well. Left knee has normal motion.

Case 11. M. K., female, twenty, married. Operation, Oct. 4, 1903.

Left knee-joint opened along inner border of patella. About 2 oz. of fluid evacuated, containing flakes of fibrin. Several fringes found hanging from under surface of patellar tendon, but patellar cartilage everywhere normal.

Convalescence uneventful.

Discharged Nov. 1, 1903.

Case 12. M. B., female, twenty, single. Operation, Nov. 4, 1903.

Right knee opened on inner aspect of joint. No

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excess of fluid. Capsule thin. Several large fringes found attached under patella and along both borders of patellar tendon, necessitating an incision over outer side of joint for their complete removal.

Nov. 17. Only 40° of motion present, so leg was manipulated under anesthesia and adhesions broken up. Convalescence rapid after this procedure.

Case 13. M. McK., female, twenty-two, single. Operation, Dec. 5, 1903.

Incision over external aspect of right knee. Immediately under the external lip of incised synovia were found four venous varices about the size of peas. Surface of membrane embracing same was removed and raw surface seared with cautery. Three silk ties found necessary to prevent venous oozing. From underneath the upper angle of the wound a large fatty tumor protruded its free end. This had a fan-like attachment over the synovial membrane covering the patella, spreading out as far as its external reflection and bound to its attachment in several places by firm fibrous bands. The previous symptoms in this case were probably due to the varicosities and not to the lipoma, and might easily have suggested a phlebitis.

Dec. 28, 1903. Good motion. Can actively extend leg to normal. Flex to right angle. Discharged home.

Three years after there was excellent motion and no recurrence of knee symptoms.

Case 14. A. M., female, forty-eight, married. Operation, Jan. 20, 1904.

Left knee opened on inner side. One lipomatous growth found adherent to internal alar ligament by a broad base, and two other similar fringes found attached to under surface of patella.

Right knee opened and two growths similar in size and origin removed.

Jan. 23. Pain, especially in left knee, since operation. Both knees examined. Scar of left found inflamed at its lower angle.

Jan. 27. Stitches removed from right knee. Wound clean. Left knee discharging slight amount of pus from above-mentioned area.

Jan. 31. Patient has been having a temperature for the past two days of about 102°. Last night it reached 105°, and was followed by a chill and fall of temperature in six hours to 101.5°. Patient was much exhausted in the morning and presented a marked septic appearance.

Under anesthesia old incision was opened and a counter-incision made on opposite side. No pus found. Joint thoroughly irrigated and wicks inserted.

Feb. 1. Local conditions appear satisfactory, but patient has failed rapidly since the operation, various stimulating measures resorted to with no more than temporary relief.

Feb. 2.[2] Mild delirium throughout night. At 6 A.M. temperature by axilla 106.4°; at 7 A.M., 107. Patient died a few minutes later.

Case 15. L. M. B., female, ten. Operation, Feb. 29, 1904.

Incision over inner aspect of left knee. A portion of the semilunar cartilage was found partly detached from its normal connections, being joined to the head of the tibia by a few fibers from its circumference and partly separated from the remaining cartilage. This portion of cartilage was removed, together with a small lipoma which was found attached to the internal alar ligament by a slender pedicle. The tumor was pyramidal in shape, with a smooth, even surface and adherent over part of its extent to the synovial membrane below the patella. No ties were required.

Plaster of Paris was applied with the knee in complete extension.

March 11, 1904. Cast removed. Motion in flexion about 30°, with pain. Discharged with directions for manipulation later.

Case 16. A. LeB., female, nineteen, single. Operation, May 13, 1904.

When capsule was opened on inner side of right knee there escaped about ½ oz. of deep red, serous fluid, indicating an old hemorrhage. Several sessile lipomata found over upper and inner aspect of joint, forming in reality a single mass the size of two thumbs placed side by side. These were quite easily removed.

May 28. Patient discharged. One hundred degrees of flexion possible, with some pain.

Case 17. H. A. C., female, twenty-two, single. Operation, Oct. 17, 1904.

Incision made over outer side of right knee. Several fatty masses were removed, most of which were attached to the anterior surface of the joint above the patella. They were easily dissected away, leaving normal synovial membrane.

Left knee was operated upon in a similar manner. Fatty masses were smaller than those found on the right side.

Oct. 20. Right knee became septic, and when stitches were removed entire wound broke open and a quantity of yellow pus evacuated. Three drains left in joint after thorough irrigation.

Nov. 4. Temperature and pulse continue elevated and knee was again opened, considerable pus obtained and few adhesions broken up.

Nov. 14. Patient in very poor condition. Circular incision connecting lower angles of former incisions. Patellar tendon cut and pocket of pus found directly underneath. Crucial ligaments and external lateral ligament cut, revealing a second pocket of pus. After thorough irrigation, leg was placed on posterior wire splint.

Nov. 24. Patient died from general septicemia.

Case 18. M. H., female, twenty-nine, single. Operation, Jan. 11, 1905.

Through an incision on the outer side of right knee-joint the capsule was found somewhat thickened. A diffuse lipoma was present in the anterior lower quadrant of the joint surrounded by numerous fringes, all of which were removed.

Jan. 27. Convalescence uneventful. For past six days passive motion beyond a right angle.

Case 19. M. A. R., female, eighteen, single. Operation, June 16, 1905.

Incision over outer side of left knee. When joint was opened a sessile lipoma was found directly under point of incision filling up the pocket beneath the patellar tendon, attached to the ligamenta alaria and reflected upon the edges of the external lateral ligaments.

June 18. Considerable swelling about the joint and a thin, bloody, purulent fluid drained from the lower angle of the incision.

Joint again opened up under anesthesia and found infected. Counter-incision made, irrigation with Harrington's solution followed by salt solution; two drainage tubes were left in the joint cavity.

July 13. Gradual improvement in knee and general condition.

Discharged against advice.

Some permanent deformity and stiffness.

Case 20. D. A., female, thirty-six, married. First operation, March 16, 1906.

Patient was operated upon for villous arthritis of ankle. Lipomatous growths removed from tendons and sheaths below external malleolus.

Discharged March 26, 1906.

Second operation, Dec. 14, 1906. Telangiectatic hemangioma. See report of case by Dr. A. T. Legg.[3]

[2] This case was probably infected from a case of osteomyelitis operated in the same room at the same time. Culture same from both cases.

[3] Boston Med. and Surg. Jour.

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Incision over outer aspect of left knee. Lipoma of solitary type protruded when capsule was opened, attached at edge of patella, 1 inch by 1½ inches in size, yellow, lobulated and flattened.

Dec. 19, 1906. Patient complains of considerable pain, especially at night, since operation. Stiff knee on sixth day, and considerable pain when any passive motion was attempted. Patient refuses to co-operate in the treatment in any respect.

Discharged Dec. 24, 1906. Advised to rest at home one week and then begin massage and passive motion. Good result eventually obtained through the efforts of a masseuse.

Case 21. E. W., female, twenty. Operation, March 30, 1906.

Incision over outer side of left knee. A band of fibrous tissue was seen extending well into the joint between its apposing surfaces, which was carefully dissected out. A bony spur which was found on upper surface of inner tuberosity of the tibia was also removed.

April 11. Patient doing very well. Discharged home.

Case 22. M. C., female, thirteen, single. Operation, July 20, 1906.

Incision over outer side of right knee. In exposing joint cavity one large fringe and three small ones were seen extending in under the patella. These were removed.

Convalescence progressive and uneventful.

Discharged Aug. 1, 1906.

Case 23. M. M., female, sixteen, single. Operation, May 24, 1907.

Knee opened on inner side. One large fringe about 1 inch by 1½ inches found attached by pedicle and several smaller fat "tabs," all of which were removed.

June 1, 20° of motion with pain.

June 5, 50° of motion with pain.

June 6, discharged, 10° more motion than at last note and no pain experienced.

Case 24. T. McK., female, thirty-two. Operation, Jan. 3, 1908.

Left knee opened over outer anterior aspect. Synovial membrane thin and a large collection of fat forming a sessile tumor size of an English walnut encountered between the synovia and fibrous capsule. This mass, together with its synovial attachment, was removed. Remaining portion of joint apparently normal, except for a small eroded area on the under surface of the patella, apparently covered by the lipoma which acted as a pannus.

Jan. 20. Ten degrees of free motion with pain, but limited beyond this point.

Jan. 22. Under light anesthesia leg was flexed to a right angle and very little resistance was encountered.

Jan. 25. Mechanical obstruction seemingly removed, but passive motion is attended with great pain.

Feb. 7. Flexion beyond a right angle painful. Active motion in extension limited, but slow manipulation overcomes this.

Improvement has been slow but progressive.

Discharged home.

Case 25. E. B. M., female, twenty-nine, married. Operation, Jan. 15, 1908.

Incision over outer side of knee. Joint opened through bulging capsule directly over lipoma. Synovia thin. Tumor removed. Remaining portion of joint normal in appearance.

Post-operative treatment progressive to seventh day, when patient began her menstrual period, accompanied by intense dysmenorrhea, temperature of 102° and pain in knee.

Jan. 25. Two days after last note, all symptoms in knee completely disappeared. A few degrees of motion.

Jan. 29. Under anesthesia knee was forcibly flexed beyond a right angle. Little force required up to this point. After ether recovery patient was able to bend knee without pain as far as bandages would permit.

Feb. 2. Motion free to 50° in flexion, beyond which there is a feeling of tension. Walks without any discomfort.

Discharged home.

Case 26. L. E. C., female, twenty-two, married. Operation, Feb. 10, 1908.

Incision over inner aspect of left knee. Capsule very vascular; very little subserous fat. When joint was opened numerous villi were found throughout almost the entire cavity, expecially about ligamenta alaria. Quadriceps pouch small and contained some viscid exudate walled off by adhesions. Many of the villi which were removed had undergone fatty degeneration. Cartilage presented normal appearance. No excess of fluid in joint.

Feb. 17. No temperature. Motions of knee free.

Feb. 20. Discharged home.

April 15. Patient entered Out-Patient Department complaining of pain in both feet. No knee symptoms. Physical examination; Marked prominence of internal malleoli, characterized by swelling and some capsular thickening. Peroneal spasm.

July 7. Feet improved, but right knee swollen and contains fluid. Villi plainly palpable. Condition of left knee good.

July 8. Patient again operated upon. Incision over inner side of right knee. Many red villi found and a red pannus extending over inner half of joint. A small spur on inner trochlear surface of femur was noted projecting through pannus. A small eroded area found over external trochlear surface. Considerable loose fibrin in the joint. A small part of the thickened capsule was excised.

July 28. Discharged home. Uneventful recovery. Motion of left knee normal and right much improved.

Sept. 4. Patient steadily improving. Knees can be extended nearly to normal.

Jan. 1, 1909. Patient under treatment with enemata and buttermilk. Condition improving.

Case 27. A. D., female, eighteen, single. Operation, May 1, 1908.

Right knee-joint opened over inner aspect. When capsule was incised, 1 oz. of yellowish fluid escaped. Many villi present, all of which were excised.

May 21. Discharged. Knee can be actively flexed to a right angle. Walks without difficulty or pain.

Discharged home.

Jan. 1, 1910. Patient has had neither recurrence of symptoms nor any difficulty with the joint since last note.

Case 28. C. K., female, nineteen, single. Operation, July 1, 1908.

Joint opened over inner aspect. Beneath capsule and slightly to inner side of patella was a lipomatous mass one inch in diameter, which was easily removed.

July 28. Recovery rapid. Motions of knee good.

Discharged home.

Case 29. S. F., female, thirty-one, married. Operation, Nov. 25, 1908.

Left knee-joint opened over both inner and outer aspects. Joint cavity contained a small amount of brownish fluid. A small lipoma situated underneath patella was removed, and another small fatty tumor was removed from the upper portion of the quadriceps pouch.

Plaster of Paris bandages applied with leg slightly flexed.

Nov. 30, 1908. Cast split. Small amount of post-operative synovitis is present. Twenty-five degrees of motion in flexion.

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Dec. 4. Operative synovitis persists. Patient has had more pain than the average case, and recovery is not as progressive as usual.

Discharged against advice.

Six months later patient has not regained full muscular power of her leg, and continues in poor general health. There is question of incipient pulmonary tuberculosis.

Case 30. L. U. C., female, twenty-two, single. Operation, Dec. 14, 1908.

Incision over outer side of left knee. No excess of fluid found. Lipoma larger than usual and attached by three fibrous pedicles to the top of the external femoral condyle and to parietal synovia. In size, 2½ by 3½ inches thick, very vascular and not apparently covered by synovial membrane. Nourishment supplied chiefly from the parietal membrane. When pedicle was exposed, larger vessels were tied before being cut, and even then, when tumor was excised, several bleeders had to be tied off. Silk seton left in lower angle of wound three days.

Patient had considerable pain for several days following operation.

Dec. 24. Can flex leg 30° without pain or much discomfort. Discharged.

July 9, 1909. Patient complains of pain in extending leg from a position of 40° flexion. Massage and baking have not brought much relief.

Oct. 14. Possible non-removal of entire tumor, recurrence of same or growth of another from a near-by site may account for present condition. There are, however, less marked symptoms now than in pre-operative condition. Patient is wearing kneecap during the day.

Nov. 1. Condition improved. Less pain on extremes of motion than has hitherto been noted.

Case 31. M. D., female, thirty-six, married. Operation, Oct. 13, 1909.

Incision over inner aspect of right knee. Pedunculated lipoma size of hen's egg found attached under patellar ligament. Removed.

Oct. 26. Fairly rapid return of motion.

Discharged home.

Case 32. R. B., female, twenty-one, single. Operation, Dec. 1, 1909.

Left knee opened over outer anterior aspect. Lipoma attached by pedicle underneath lower border of patella and tendon.

Dec. 10, 1909. Passive motion to 45° in flexion.

Dec. 15. Flexion to 90° with some pain.

Dec. 20. Discharged home.

Dec. 29. Full extension. Active flexion to right angle. Passive, 20° beyond a right angle, accompanied by some pain.

Case 33. E. D., female, twenty-eight, married. Operation, Dec. 22, 1909.

Both knees opened over external aspect. Large solitary lipomata found in each joint similar in size and position, subsynovial, and situated in outer, lower quadrant.

Dec. 31. Motion as far as bandages will permit, without pain.

Jan. 17, 1910. Motion in right to beyond right angle. In left, to a right angle. Walking without support.

Case 34. A. M., female, twenty-three, single. Operation, Dec. 29, 1909.

Right knee-joint opened over outer aspect. Large amount of fluid in the joint. Large lipoma-like growth was found attached by pedicle to external aspect of patellar tendon. The villous tip had quite a little fibrin adherent to it.

Dec. 31. No temperature or pain.

Jan. 10, 1910. Normal motion in the knee. No swelling.

Discharged.

*(To be continued.)*

## THE SMALL FIBROUS PROSTATE.*

BY ARTHUR L. CHUTE, M.D., BOSTON.

The occurrence of several cases of small fibrous prostate relatively recently has directed my attention especially to this subject and has impressed upon me the fact that this type differs in certain respects from the large prostate that we commonly see. The actual dangers to life are the same as those seen in the hypertrophic gland, but the findings on examination, and the treatment these prostates require, quite warrant us, I believe, in considering them as forming a class by themselves. I believe that to variations of this condition are to be ascribed a good many of the more obscure obstructive conditions, such as contractures of the bladder neck, bars at the bladder outlet and some at least of the cases of "prostatism without prostate" or "obstruction without mechanical obstacle."

I shall give short abstracts from several of my cases that illustrate the points that I wish particularly to bring out.

Case I. A man, forty-seven years old, seen about three years ago. He had passed several small stones, the first eleven years before, the last three years before. For three years he had had frequent and painful urination. His disability had been such that he had been unable to work a considerable part of the time. He had to get up from two to eight times at night — stream small and without force. He had to strain hard to urinate. His prostate was not increased in size. A large stone was seen in his bladder. The stone was removed by suprapubic cystotomy. I could see no jutting of the prostate into the bladder at the time of operation. There was a recurrent suprapubic sinus and a turbid urine following this operation. Four months after operation he returned and I found a turbid residual of 8 oz., as well as a small phosphatic stone. I removed by a perineal operation a small amount of dense prostatic tissue, also the stone. He appeared four months later without urinary symptoms and with a transparent urine. I have heard from this man several times since and he remained well at the time of the last report.

Case II. A man of fifty-two whose urinary symptoms began seven years before. He was troubled chiefly with pain, frequency and a turbid urine. Occasionally he had chills and pain in his left kidney region. He passed urine with moderate frequency during the day and from three to five times at night. He sat down to urinate when he could, as the straining necessary to urination occasionally caused his bowels to move. He had a retention of some hours' duration on one occasion. He had had considerable local treatment of his bladder without relief. He had a turbid residual of ½ oz. No definite prostate could be felt by rectum. His prostatic urethra was very sensitive, and the reaction after the passage of sounds caused even greater difficulty in urination. I removed by perineal operation a small amount of very dense prostatic tissue, estimated at a little over a dram in weight. In attempting to bring the prostate into the field the tractor tore through the bladder outlet on one side, a thing that was looked upon as unfortunate at the time. It is, however, probable that this was an important factor in bringing about his good functional result. About three weeks after his prostatectomy this patient had an attack of pain in his right loin accompanied by chills. There was a tender mass. A small shrunken pyelonephrotic kidney was

* Read at the annual meeting of the American Urological Association in St. Louis, June 6, 1910.

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removed. This man at last report, some two years after operation, had had no recurrence of his symptoms, though his urine was not entirely clear.

Case III. A man, fifty-four, who had a perineal section and drainage in the summer of 1908. This was done partly because of pain, frequency and turbid urine, and partly as a diagnostic measure. He had, following operation, a troublesome perineal sinus that had to be curetted. In March, 1909, he came under my care because of the illness of the gentleman who had previously operated upon him. He was having a considerable temperature with tenderness over his right kidney, evidently an ascending infection. His prostate was not increased in size, but was fibrous. Soft rubber and woven catheters were caught and held at the bladder outlet, while a curved instrument entered his bladder fairly easily. There was a residual on various occasions of from 6 to 13 oz. The amount apparently depended upon whether he had had a large sound passed recently or not. The cystoscope showed a deep anterior commissure, but nothing more. The diagnosis of a band or bar at the bladder outlet was made and his bladder opened above the pubes. A little fold of mucous membrane that was found blocking the bladder outlet was divided with a cautery. He made a fair convalescence and has been better, but when seen last a few days ago still had a turbid residual of 8 oz. In this case I overlooked the underlying process, the small fibrous prostate.

Case IV. A man, fifty-seven, on whom I did a perineal section for a filiform stricture of the deep urethra in May, 1909. As he had had chills at intervals for some years and had a turbid urine, I drained his bladder for a time. At the time he left the hospital he emptied his bladder completely and had a urine that was nearly transparent. In the summer of 1909 his urine again became turbid and I found a residual of 2 oz. In spite of the use of a catheter and bladder washings, I found in December, 1909, that his residual had increased to 4 oz., though his urethra took a 26 F. sound. He presented a prostate that was not enlarged, but was fibrous, with a definite marking of the commissure or isthmus between the lobes. In January, 1910, he again had chills. In February a perineal operation was performed and all the prostatic tissue that I could trim away was removed. This tissue only weighed a dram and a quarter. The bladder outlet was very tight and fibrous. I dilated it very considerably, but did not incise it as I should have done. This patient made a good recovery, but three months after operation had a residual of 1 oz. of slightly turbid urine. He also has had a slight chill on one occasion after the passage of instruments.

Case V. A man of sixty-nine whose urinary trouble dated back about three years, and had been increasing gradually. He had a residual of from 2 to 3 oz., with rather frequent urination, especially at night. He had passed a catheter occasionally, but for a time had been unable to do this. His greatest complaint was of perineal discomfort, that was worse when he was on his feet; as a result he spent most of his time lying down. His prostate was little, if any, increased in size, but was dense and fibrous, with a well-marked sulcus. Perineal prostatectomy was done and about 2 dr. of very dense tissue removed. The bladder outlet was felt to be a dense fibrous ring — this was well dilated. When the perineal tubes were removed this patient was unable to pass urine, and his bladder distended to above the pubes. A retention catheter was used for a few days, but when it was removed the same state of affairs recurred. At a second operation I removed a few bits of prostatic capsule and a very little prostatic tissue. I also slit the bladder outlet on each side for about a half an inch, fearing to cut it on the floor because of the disturbed relations following my earlier operation. There has been no difficulty in emptying his bladder completely since the second operation. On the contrary, at the present time, one month after operation, he has some incontinence, but his control seems to be gradually returning and I believe in time that it will be satisfactory.[1]

Case VI. A man of sixty whose bladder symptoms began about ten years ago. Two years ago a large stone was removed by a suprapubic incision, and a small median bar was incised at the same time. Following this he had relief for a time, but his symptoms gradually recurred until he spent a large part of the day and night with a catheter tied into his bladder. In the morning, after removing his catheter, he could pass a little urine, but by noon his ability to urinate would be lost and he would be forced to replace his catheter, and spend the rest of the day on a couch. By rectum I could feel absolutely no sign of any prostate. Cystoscopically there was a marked anterior commissure and a slight jutting into the bladder of both lateral lobes. A perineal prostatectomy was done April 25, 1910. I was able to remove by the use of curved scissors and rongeur forceps 2 dr. of fibrous tissue. The sharp unyielding ring of the bladder outlet was cut down to the floor and a lateral incision was made on his left. This man passed all his urine by urethra on the fifteenth day after operation. A catheter showed that he emptied his bladder completely. His urine was clearing up when he left the hospital three weeks after operation.

I have seen a number of other cases of this type, but these are the most typical and illustrate the points that I wish to bring out which refer particularly to the etiology, diagnosis and treatment of these small fibrous prostates.

Macroscopically these prostates present at operation a dense, fibrous, almost cartilaginous condition and do not show the least tendency to form enucleable tumors such as we see in the hypertrophic cases. There may be places where the tissue is a little denser than in others, but this is not marked, and the consistency seems, on the whole, homogeneous. The amount of tissue that one removes in such cases is always small. I think the largest amount that I have removed from a prostate of this sort has been about 5 dr.

Some of the earlier prostates of this sort that I operated upon were not examined microscopically. The later ones have all been. They have shown a hyperplasia of the glandular elements, sometimes very marked. There has been an infiltration of the periglandular tissue with lymphocytes, plasma cells and, in some places, small round cells. In some there has been an increase of connective tissue throughout the gland which has compressed and distorted the ducts and acini. I do not know, but I suspect, that there has been a diminution of the muscle fibers.

The microscopical picture, then, has been that of a low-grade inflammation, to be compared with what we see in hyperplastic endometritis, for instance.

I formerly was of the opinion that some definite inflammatory invasion of the gland, probably in most instances a gonorrheal infection, was the

[1] At the present time this patient has perfect control.

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underlying cause of these small fibrous prostates. Undoubtedly many of these cases will have a history of a previous gonorrhea, and I believe that the small fibrous prostate in some instances represents the end result of a gonorrheal prostatitis. We must, however, admit that other causes serve to bring about the condition quite as well as a gonorrheal infection. In only three of the reported cases was there a history of a gonorrhea, while in an equal number there had been no urethral infection. This raises the possibility that the previous gonorrhea may not have been the cause of the fibrous prostate, even in those patients who had suffered from gonorrhea. In searching for a probable cause for the small fibrous prostate, in the cases that have had no urethral infection, I have been unable to find anything that would serve as a reasonably probable etiological factor. In none of the cases had there been a history of anything like an acute prostatitis. It seems probable from the histological appearance that the process depends upon some very mild infection — without a doubt not of venereal origin. Very likely these infections may be brought by the circulation. The theory that they are infections from the rectum by way of the lymphatics hardly seems probable to me. If from the rectum, the infection would probably be with the colon bacillus, and I shall expect that the acute invasion would be attended with distinct symptoms.

The diagnosis of this condition can be most puzzling, especially if one has not yet trained himself, in all prostatic cases, to consider the "obstructive" rather than the "hypertrophic" element. If one demands a prostate that is enlarged by rectum as an essential part of every picture of prostatic obstruction, these cases will naturally be most puzzling. If, on the other hand, one sees in every man who has difficulty in urination the possibility of an obstructive prostate, there is much less difficulty.

When a urinary obstruction that depends upon a small fibrous prostate has not progressed beyond the first stage, that is, while the bladder is still able to completely empty itself, and the symptoms are mostly those of bladder irritation, the diagnosis is difficult and may require very close study. Case II, where the residual was only ½ oz., a negligible quantity, was of this type and the cause of his symptoms had been overlooked by several men. Occasionally in these cases one may feel by rectum practically no prostate at all, as in Case VI. More often, however, one feels a small but clearly defined fibrous-feeling gland, with a well-marked sulcus; though the prostate is not enlarged, this condition may be considered definitely abnormal and suggestive of the possibility of obstruction. If such a patient presents, in addition to his symptoms of bladder irritation, a marked resistance to a soft catheter just at the bladder outlet, the condition is highly suggestive. The passage of a sound will often allow one to feel with great ease the gripping of the instrument by the contracted bladder neck. Some of these patients, with obstruction due to a small fibrous prostate, get temporary relief from the use of sounds, for with them the obstruction to urination is not from a raising or deformity of the bladder outlet, but is from a lack of distensibility of the outlet. This lack of distensibility of the bladder outlet is due to the ring of fibrous prostatic tissue that has been almost shrunken-on, about the beginning of the prostatic urethra.

In the doubtful cases a cystoscopic examination of the bladder outlet will often be of help in arriving at a correct diagnosis. The prostate may be seen to bulge back into the bladder a little on the sides, or the anterior commissure may be very marked. Occasionally it will be seen that the bladder outlet is a little raised above the level of the trigone. The bladder wall will often show bundles of hypertrophied muscle fibers, a sign that the bladder has met with unusual resistance in its attempt to empty itself. Exclusion will, however, often have to play a considerable part in arriving at a correct diagnosis in the cases that do not as yet show a residual.

When there is a residual urine, the diagnosis is much easier. I feel that, broadly speaking, if one can rule out stricture, a lesion of the spinal cord or a diverticulum of the bladder, he may assume that the cause of any residual urine lies in some abnormality of the prostate. I include under the term abnormality of the prostate not only the hypertrophic and fibrous prostate, but also the bars at the bladder outlet, and contraction of the bladder neck, since I believe that they are almost without exception dependent upon fibrous changes in the prostate and are to be considered as part of the prostatic process.

Here I wish to make a slight digression in support of this opinion. With possibly a few exceptions due to a hyperplasia of misplaced prostatic tissue, we must either assume that the bars at the bladder outlet are congenital, in which instance it is hard to explain why they are symptomless over a long period of time, or we must assume that they are produced by some change in the immediate neighborhood. With a marked microscopical change in an organ lying in immediate proximity, it seems to me fair to assume that the abnormality probably depends on this change. The probability of this seems heightened when we consider the joint action that the bar and prostate seem to play in bringing about the obstruction in some of these cases. Cases III and VI illustrate this very well. As regards the contracted bladder outlet, it is hard to believe that an hypertrophy of a weak muscle, such as we know the internal sphincter to be, can produce such a dense and unyielding ring as we sometimes see in these cases. It likewise seems improbable that any thickening of the mucous membrane alone would be likely to bring about such a result. On the other hand, a circle of fibrous prostatic tissue sunk into the angle of junction of the bladder and urethra would produce just such a thick, firm ring. Those who have dealt with this type of prostate know how dense this tissue is, and how intimately it attaches itself to the mucous membrane.

The cases, then, in the second and third stages

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of obstruction present little difficulty in diagnosis if one will bear in mind that one can have a prostatic obstruction without an appreciable increase in the size of the gland as felt by rectum. Any obstruction that does not depend upon an hypertrophic prostate or new growth must depend upon a fibrous prostate, or one of the conditions that it produces.

We have two other forms of prostatic diseases that may be confused with the fibrous prostate — tuberculosis and carcinoma of the prostate.

In tuberculosis the gland rarely has the clear-cut, hard outline seen in the fibrous prostate. It is usually more tender; often there is a mass in an epididymis or a vesicle, and in all my personal cases tubercle bacilli have been found in the urine. In one or two cases, however, the condition was perplexing at the outset.

It is often difficult, and sometimes impossible, to differentiate between the small fibrous obstructive prostate and the early stage of a carcinomatous prostate. The question of malignancy arises in the consideration of many of the cases of this type since the malignant prostate is, as a rule, relatively small and hard, though this is not without its exceptions. When the carcinoma is advanced, the stony hardness, rather than fibrous consistency of the gland, and especially the fixity of the prostate, makes the differentiation easy. In a small proportion of cases I find it absolutely impossible to tell before operation whether a given prostate is of the small fibrous variety or a beginning carcinoma.

Great interest attaches to the treatment of these small fibrous prostates, for I believe it is in this type of obstruction that we meet many of our operative failures or unsatisfactory results. I know this has been my personal experience. The suprapubic enucleation is, in my opinion, quite unsuited for dealing with this type of obstruction. In the only instance in which I have attempted it in this sort of a prostate I found that it was only with the greatest difficulty that I could tear away a small amount of tissue. This gave some relief, to be sure, but an inferior result. The median perineal operation would seem to be as inapplicable as the suprapubic operation, though I must confess that I have not tried it. The transverse perineal operation seems to me the one best suited for dealing with this condition.

As I have studied my cases, and particularly my unsatisfactory results, I have arrived at the conclusion that in these cases one must do more than it is necessary to do with the hypertrophic cases. It is not enough in many instances to simply remove all the prostatic tissue that one can get. This fact is well-illustrated in my fourth and fifth cases. In Case IV, after the removal of all the prostatic tissue that I could get, the patient remains unable to empty his bladder perfectly. In Case V, I was compelled under similar circumstances to do a secondary operation. I believe in theory that if we removed all the prostatic tissue beneath and at the sides of the prostatic urethra, and left the urethra absolutely free of prostate, that would be sufficient. In practice I doubt if this can be done, as there seem to be little bands of prostatic tissue that are fairly sunk into the wall of the urethra. At any rate, after the removal of all the tissue that we can get, there often remains a small tight fibrous bladder outlet, wholly different from the gaping, open bladder outlet seen after the removal of the usual hypertrophic gland. I believe that it is essential that this fibrous ring be split, either by an incision on the floor or by an incision on the floor and on one side. This cutting of the bladder outlet also does away with any slight bar.

In order to meet these requirements I have gradually made certain modifications in the usual transverse perineal prostatectomy that I think are especially adapted for dealing with this condition. I dissect the perineum and lay the prostate bare after the method that Young has so clearly described. Then, instead of opening the urethra just in front of the prostate, I open into the prostatic urethra through the tissue of the prostate itself, at a point just back of its tip. This is done in order that I may avoid any chance of injuring the compressor urethræ, as it is most important that this muscle be left intact if one is to intentionally divide the bladder outlet, including, as this will, the internal sphincter. With the tractor in place, and with the surface of the prostate well exposed, I either make a transverse incision through the capsule, or, making an incision into the substance of the gland, I remove with curved scissors first the exposed surface of the prostate and then all of the prostatic tissue that I can get, below and at the sides of the urethra. I remove the tissue back to where I can feel the tractor in the bladder separated from the prostatic cavity by only the thickness of the bladder wall. In digging away this prostatic tissue I have lately found biting forceps of great service. Their use for this purpose was first called to my attention by Dr. A. T. Cabot. I have had a pair of rongeur forceps, such as are commonly used for the removal of adenoids, made a little less curved and find them useful. I find them quite as useful, however, as a forceps to pick up the dense prostatic tissue as for their biting ability. They can be made to bite into the densest tissue and give one a hold that I have been wholly unable to get with ordinary toothed dissecting forceps or with tenacula of various sorts.

When one has removed all the prostatic tissue that he can get, it is necessary to see if the bladder outlet presents a sharp, tight ring. If it does, this must be cut; a single cut on the floor, well through the band, will, I believe, be sufficient in most cases, It can be supplemented with a lateral cut if desired, or a cut on either side may take the place of the incision on the floor; the point is to leave the bladder outlet open and patulous. I do not believe that incontinence follows this cutting of the bladder outlet, if one leaves the compressor urethræ intact. The incontinence in Case V of my series might seem to contradict this, but I am convinced that this was due to an injury of the membranous urethra that I discovered at the close of the first operation. This

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was brought about by the unguarded use of a retractor. The cutting of the bladder outlet has not usually been attended with much hemorrhage. In a case more recent than those described in this paper, I encountered a sharp hemorrhage, but it was perfectly controlled by gauze packing.. In this type of prostate the bleeding incident to the removal of the prostatic tissue itself is less than that seen in the large hypertrophic prostates in which there is the increased blood supply commonly seen in tumors in general.

After incising the bladder neck double tubes should be placed in the bladder and brought out through the perineal wound. I usually use tubes having a diameter of $\frac{5}{16}$ inch, sometimes $\frac{3}{8}$ inch. I believe it is well in these fibrous prostates to leave these tubes in place for three or four days, instead of one or two. It has been my custom of late to pass a small rubber catheter into the bladder through the urethra at the time that I insert the perineal tubes, and to fix it by a stitch through the meatus. It seems to hasten the closing of the perineal wound and to facilitate the subsequent passage of instruments if this becomes necessary. This I do not confine to operations on fibrous prostates, but use it in the hypertrophied ones as well.

I lead rubber-covered wicks down into the cavity from which the prostatic tissue has been removed, and, after bringing the fibers of the levator ani together with two catgut sutures, I close the skin wound on either side of the tubes and wicks. While the urine is bloody and contains small clots I have the bladder irrigated; at first at intervals of an hour or two, later at less frequent intervals. The wicks are removed in twenty-four hours.

These modifications of the usual operative technic have gradually been evolved to meet difficulties that I have encountered in dealing with these cases. The method in its entirety has as yet been used in only a few cases, but has given satisfactory results.

The points to which I would call special attention are these:

There is a class of obstructive prostates in which the rectal examination shows little, if any, increase in size of the gland. These prostates are dense and fibrous, showing little similarity to the large hypertrophic prostates. They are the result of an inflammatory process. Their recognition before there is an appreciable residual may be difficult. They are often associated with a contraction of the bladder neck or a bar at the bladder outlet. In order to give these patients relief it is important not to overlook either element of the obstruction.

## ANALYSIS OF WOUND INFECTION IN ONE THOUSAND CONSECUTIVE CLEAN OPERATIVE CASES.

BY W. P. GRAVES, M.D., BOSTON.

The development of modern surgical technic has reached a point where, under proper conditions, fatal or even dangerous sepsis following clean operations is, for the most part, eliminated. The troublesome occurrence of wound infection, however, is still sufficiently frequent in public hospital practice to deserve serious attention. In an effort to study the possible means to avoid wound sepsis I have analyzed the present series of cases from my practice at the Free Hospital for Women in in order to establish a basis of comparison for future work, and also to stimulate, if possible, comparative reports from other hospitals. As the avoidance of wound sepsis is unquestionably a matter largely of techincal detail, it is hoped that in this way some useful information may be gained in the solution of a difficult problem.

Each operation was performed from beginning to end by myself, thus establishing the personal equation. The conditions relating to the preparation of the patient, general operating-room technic and post-operative treatment were practically constant throughout the series. The technical treatment of the wound was, in some instances, changed and will be noted later. The chief inconstant factor in the technic was the somewhat frequent changing of operating-room assistants and nurses. The custom of frequently changing assistants which unfortunately generally prevails in the public hospitals of this community is a considerable deterrent to well-organized and systematic surgical work, and probably has some influence in the matter of wound sepsis. How far this is true can only be determined by a comparison with cases from public hospitals where the system of permanent assistants obtains.

The present series of 1,000 cases comprises 574 laparotomies, of which 235 were combined with plastic vaginal operations; 376 uncombined plastic operations, 55 breast operations and 11 miscellaneous. In the list of laparotomies are included inguinal hernias and operations on kidneys. Cases of chronic pelvic inflammatory disease are included as clean cases if they were not running a temperature at the time of the operation. Some of these having sterile pus in the pelvis were temporarily drained through the vagina. Radical operations for cancer of the cervix uteri are also included as clean cases, although operated on in the presence of an ulcerated surface. With an adequate preparation of the ulcerated surface, such operations may properly be included in the category of clean cases. Complete lacerations of the perineum are also regarded as clean cases, although the field of operation is exposed to the mucous membrane of the rectum. Most of the breast amputations and abdominal hernias were drained through stab wounds, a form of drainage which adds no risk of infection, but, on the other hand, as will be seen, is of great assistance in preventing general sepsis of the wound.

Out of the 1,000 operative cases, 51 had some form of wound infection which in all but one case was of a mild form, the organism being a staphylococcus in all instances. Twenty-eight of these infected cases were laparotomy wounds where the infection consisted mostly (19 cases) of slight sepsis of a buried catgut knot, the wound closing immediately after extraction of the knot. Some

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of these catgut knot infections did not appear until some time after the patient was discharged from the hospital. The other 9 laparotomy wounds were septic to a greater or less extent throughout the wound. Of these 9 cases of general sepsis in the laparotomy wound, 7 occurred in extensive abdominal hernia wounds and 2 occurred in inguinal hernia wounds. In other words, all the cases of general sepsis in the list of laparotomies occurred in hernia wounds. Nine of the breast wounds were more or less septic, the sepsis of 2 of them, however, being confined to a small area where the angle of a too tightly drawn plastic flap necrosed. Ten of the perineum wounds had stitch abscesses, though none were completely septic. Three of these cases were operations for complete lacerations; 4 were cases of very large thin-walled rectoceles. Of the trachelorrhaphies, one wound failed to unite; of the anterior colporrhaphies, one went septic; of the miscellaneous cases, a plastic on the urethra and an operation on the cervix for anteflexion failed to unite by first intention. The total mortality from all causes in the 1,000 cases was 3. One patient died from shock following a radical operation for cancer of the cervix. The second case with a pre-existing heart lesion died of cerebral embolism following an operation for chronic appendicitis. The third case was operated on for an enormous post-operative ventral hernia. The lower end of the wound became septic. Five weeks after the operation and after the wound had healed, the patient died of a sudden acute endocarditis. The endocarditis was probably in some way the result of the wound sepsis. This case is, therefore, recorded as one of death from sepsis.

Although the cases operated on number 1,000, the actual number of wounds subject to infection was much greater; e. g., a combined plastic and laparotomy case might have, beside the wound of the abdomen, a wound of the cervix, of the anterior vaginal wall and of the perineum. In order, therefore, to determine the exact proportion of sepsis to all the wounds, I have constructed the following table:

| Nature of wound. | Number of wounds. | Total number of septic wounds. | *Number of wounds with general sepsis. | Total deaths from all causes. | Deaths from sepsis. |
|---|---|---|---|---|---|
| Laparotomy, | 574 | 28 | 9 | 3 | 1* |
| Perineorrhaphy, | 499 | 10 | 0 | 0 | 0 |
| Trachelorrhaphy, | 465 | 1 | 0 | 0 | 0 |
| Anterior colporraphy, | 313 | 1 | 1 | 0 | 0 |
| Miscellaneous, | 11 | 2 | 0 | 0 | 0 |
| Breast, | 55 | 9 | 7 | 0 | 0 |
| Total, | 1,917 | 51 | 17 | 3 | 1 |

| | Per cent. |
|---|---|
| Proportion of sepsis to cases operated on, | 5.1 |
| Proportion of sepsis to all wounds, | 2.6 |
| Mortality from all causes, | .3 |
| Mortality from sepsis. | .1 |

SEPSIS IN PLASTIC WOUNDS.

A study of this table will show that the figures for the vaginal plastic operations are fairly encouraging. Of the 465 trachelorrhaphies, only 1 became septic, although there are included in this list about 50 high amputations. One of the anterior colporrhaphy operations became septic, the failure in this case being entirely due to a lack of coaptation of the wound edges. It may be said, therefore, that sepsis in operations for laceration of the cervix and for cystocele should be practically eliminated, and that when sepsis does occur, it is due to unskillful approximation of the wound edges. The operations on the cervix for lacerations were all performed according to Emmet's method, and the amputations were performed by Hegar's method. The operations of anterior colporrhaphy were, for the most part, done by the method described by me elsewhere.[1]

Sepsis occurring after perineal operations is, under certain conditions, very difficult to avoid. Three of the 10 cases of stitch abscesses in perineal wounds, recorded in the table, followed operations for complete laceration through the sphincter. Considerable experience in operating on cases of complete tear has convinced me that a certain percentage of sepsis, even with the most extraordinary precautions, is, in these cases, unavoidable. It should be remembered also that sepsis occurring after an operation for complete laceration may be a grave condition and is sometimes fatal. Fatal sepsis from an operation for complete tear usually eventuates in peritonitis. The operation should, therefore, be regarded as a major one, and not to be undertaken excepting under the most favorable conditions. Four of the septic perineal cases recorded here followed operations for large thinned-out rectoceles in fat, elderly women. The only practical method for curing this condition is to employ an extensive Emmet's operation by which it is necessary to quilt sutures into the denuded rectocele in order to draw it back into the vagina. I am convinced that the stitch abscesses which occurred in each one of these 4 cases were due to carrying the stitch too near the rectal mucous membrane, and thus exposing it to infection. It is probable that by greater care and skill the sepsis in these 4 cases might have been avoided.

SEPSIS IN ABDOMINAL WOUNDS.

The figures in the table relating to sepsis in abdominal wounds are less satisfactory than those relating to plastic wounds. The sepsis in these wounds is divided into two types, as has been mentioned above; first, the slight infection of a catgut knot, which results in a small sinus, until the knot is discharged or extracted, and secondly, where the wound to a greater or less extent becomes generally septic. The only abdominal wounds in the entire series which became generally septic were hernias, either abdominal or inguinal, the sepsis in all the other wounds being of the first type, namely, infection of a catgut knot. In operations for abdominal hernia, I am accustomed to do a very extensive operation which entails a long wound that is exposed for a considerable length of time on account of the difficulty of

* Acute endocarditis following wound infection.

[1] Surg., Gynec. and Obstet., August, 1910

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the operation. Most of the operations for ventral hernia are done on patients who have a large amount of abdominal fat. These factors, together with the necessity of dissecting away the fat extensively from the aponeurosis, make operations for ventral hernia peculiarly liable to sepsis. In these cases I have been able to reduce the percentage of infection by draining the dead space caused by the dissection of the fat from the fascia through stab wounds, one on each side of the lower end of the main wound. Penrose drainage tubes are used and can be placed in such a way as to be drawn out thirty-six to forty-eight hours after the operation without disturbing the dressing. It is most important to leave the skin wound absolutely dry before closing. What has been said about extensive abdominal hernia wounds applies also to the wounds of radical breast operations where a large wound area is exposed for a considerable length of time with much dissection of fat, and leaving of dead spaces. Nearly all of the septic cases recorded in the table occurred before I had adopted an effective method of draining the whole wound by means of the Penrose tubes. The necrosis of the angle of a skin flap due to plastic devices for covering in a widely dissected area is not a serious complication, leaving as it does only a small granulating space, which readily heals over.

The infection of buried catgut knots has continued throughout the series despite all efforts to prevent it. The trouble cannot be laid to the catgut, as all the catgut used was tested bacteriologically in the Free Hospital laboratory before being used and was invariably found to be sterile. From a study of the wounds of all the hospital cases for several years it has been noticeable that catgut knot infection is much more likely to occur in wounds where the edges are carelessly approximated, so that one overlaps the other. This doubtless accounts for the fact that in performing the same class of cases one surgeon may have more wound sepsis than another. In order to test this observation a change was made in the present series in the method of closing the skin. In about one third of the cases the skin was closed with interrupted silkworm gut sutures. The rest were closed by a few deeply placed silkworm gut sutures and a running No. 00 chromicized catgut stitch. The latter method secures a much better approximation of the wound edges, and shows a considerably lower percentage of catgut infection, though it has not entirely prevented its occurrence.

In common with other surgeons I note that wound infection is much more common in public hospital work than in private practice, where it is almost *nil*. This cannot be due to infection from other septic cases. At the Free Hospital the number of acute septic cases operated on is no greater than at a private hospital. Moreover, in our public hospitals, all the conditions for systematic avoidance of sepsis are superior to those found at the average private hospital. One is, therefore, driven to the conclusion that the difference is largely due to the personal equation of the patient, and that the person whose skin is habitually clean is far less likely to incur wound sepsis. This is a most important fact and establishes the principle that the preparation of public hospital cases must be much more rigorous than that employed for private cases. The technic which I am about to describe as being employed in the series of cases here reported will doubtless seem to many laborious and unnecessary. In the plastic cases the painstaking preparation, though requiring much attention on the part of the nurses, and some inconvenience on the part of the patient, seems to be thoroughly justified by the results. Out of 611 patients who received plastic operations, only 13 had any form of sepsis. In all these cases the sepsis was slight.

### PREPARATION OF PLASTIC CASES FOR OPERATION.

Twenty-four hours before operation the patient is given magnesium sulphate, ℥ii. The external genitals are then shaved well up to the abdomen over the flanks and around the anus. A high soap suds enema with ʒi of turpentine is given. Successive vaginal douches are then given, first of soap suds, then plain water, then of bichloride 1–5,000, after which the area shaved is scrubbed with green soap on gauze. A bichloride pad soaked in 1–5,000 corrosive is applied and reapplied fresh every time the patient urinates. Early in the morning of the operation repeated enemas are given until the bowel is thoroughly empty, and the water runs clear. This is followed by a plain water and then a bichloride 1–5,000 vaginal douche. A fresh pad is applied and left until the patient is taken to the operating room. In the operating room after the patient is etherized she receives another scrubbing with gauze of the vagina and external genitals and all the parts then rinsed with sterile water. After a preparation of this kind an involuntary movement of the bowels during operation practically never happens. The care of the patient after operation is also of great importance for the avoidance of sepsis. Two douches, one of bichloride 1–5,000, and one of sterile water, are given daily until after the patient leaves the hospital. Perineal stitches are rinsed with sterile water under aseptic precautions after each urination and defecation. External perineal stitches are removed beginning on the fifth or sixth day, those being removed first which have a tendency to cut in or cause reddening of the skin. All the stitches are out on the ninth day, when the patients are allowed to sit up.

### PREPARATION FOR LAPAROTOMIES.

In regard to skin preparation for laparotomies, there is a considerable divergence of opinion among surgeons, the tendency of the present day being more and more to regard the old-fashioned elaborate preparations as unnecessary. The methods used uniformly in the series here presented have been distinctly of the old-fashioned type, but have been adhered to from a conviction that the results so far as wound sepsis is concerned compare favorably with those in other public

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hospitals where the more complicated methods of preparation have been given up. The abdomen is shaved and scrubbed twenty-four hours before operation, a green soap poultice being left on for six hours after each time. The abdomen is rinsed with sterile water and 70% alcohol, and a bichloride dressing is left on until the following morning, when the abdomen is again rinsed off with sterile water and alcohol and a fresh dressing applied. In the operating room the abdomen is treated with permanganate and oxalic, sterile water, and 70% alcohol. The use of permanganate and oxalic has been almost universally abandoned in other hospitals. I am still strongly in favor of its use, especially in public hospital practice, my convictions being formed after repeated bacteriological examinations of surgeons' and assistants' hands prepared by this method. The bacteriological results from the permanganate, oxalic and alcohol preparation are incomparably better than those from any other method tried, while the absence of injury to the skin and nails of the surgeon's hands is of itself, as compared with other methods, sufficient to recommend it. Rubber gloves are put on in a 1–10,000 bichloride solution.

The technic thus described was used in all the laparotomy cases, the number of which amounted to 574. As 28 of these became septic to a greater or less extent, it will thus be seen that the occurrence of sepsis was a little over twice that of the plastic cases. Considering the fact, too, that in the plastic cases, taking all the operations into account, there were nearly three times as many wounds, the percentage of sepsis in the laparotomy cases is still greater by comparison. As equal care was taken in the technic of both classes of cases, the results show that abdominal incisions are much more susceptible to superficial infection than are plastic wounds.

In order to compare the results of the technic of the present series of cases with other well accepted methods, I am now carrying out a series of cases in which the abdomen is prepared with the tincture of iodine. This method has apparently been extremely successful. A report of the results of this method will be made at a later date.

## THE COMPARATIVE HISTOLOGY OF FEMORAL BONES.

BY J. S. FOOTE, M.D., CREIGHTON MEDICAL COLLEGE, OMAHA, NEB.

It is interesting to notice the diversity of structure present in the femurs of various animals. We have been led to think that bone is bone, that long bones, and especially similar bones wherever they occur, have the same structure because they are used for the same purposes. This is not true. Microscopical examinations of entire sections of thirty femurs of as many different animals show that the structures and their arrangements are not at all the same. They vary in different animals, and even in the walls of a bone of any one animal. The anterior wall is unlike the posterior; the outer wall unlike the inner. Nor are the linear portions of a bone the same. If a long bone, like the femur, is divided into thirds, each third is found to differ from another third. Therefore a correct knowledge of the histology of bone cannot be obtained from prepared sections of small pieces sawed from the walls of bones. Entire cross-sections must be made in each case. Furthermore, a drawing and description of one long bone will not answer for another.

In a general way femurs answer a common purpose, but in specific ways they differ considerably. The various habits of animals, the complex, muscular stresses to which their femurs are exposed, and the variations in position relative to the bodies which they support, demand corresponding structural arrangements peculiar to the animals possessing them. Thus the femurs of swimmers, flyers, scratchers, climbers, crawlers, runners and jumpers differ from each other very decidedly. Bone exhibits a very ready structural response to functional demands.

We are accustomed to one type of bone, viz., the Haversian system type. It is the familiar type described and plated in books. It is human and will not answer as a formula of the general bone structure of animals. In most cases a small piece of a long human bone is described. In some instances entire cross-sections of small bones, as the fibula, radius, metatarsal or metacarpal, are given. This type, in its pure form, appears to be peculiar to man, as none of the other femurs examined show it. The completely developed Haversian system evidently belongs to the higher animals and exhibits evolutionary forms.

Entire cross-sections of the femurs of the following thirty animals have been examined as they were received. They were not selected.

Frog, normal and fractured; snapping turtle, domestic turkey, wild turkey, wild goose, mallard duck, crow, domestic chicken, man, ox, prairie dog, peahen, large horned owl, woodchuck, dog, rabbit, sheep, pig, cat, skunk, mink; raccoon and os penis of same; muskrat, opossum, wolf (timber), goat, alligator, rat, wild cat, small gray fox.

All sections are taken from the middle of the shafts, ground to proper thinness, mounted in hard balsam and examined with the same objectives, oculars and tube lengths of a Zeiss microscope. Drawings are then made for the purpose of comparison and are intended to show the developments and arrangements of the lamellæ, laminæ, lacunæ and Haversian systems rather than their exact number.

The following general outline is followed in all examinations:

1. Antero-posterior diameter of the bone.
2. Lateral diameter of bone.
3. Antero-posterior diameter of medullary canal. (To show variations in shape and thickness of walls.)
4. Lateral diameter of medullary canal.
5. Medullary canal full or empty.
6. Trabeculæ of bone — present or absent.
7. Cancellous bone — present or absent.
8. Compact bone — extent of.
9. Hardness or density.
10. External circumferential lamellæ.
11. Development and arrangement of central

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Haversian systems. (Haversian system type of structure.)

12. Internal circumferential lamellæ.

13. Laminæ — position of — concentric or oblique.

14. Lacunæ — character of — long and narrow or oval or round.

15. Canaliculi — character of.

16. Type of structure — lamellar — laminar or Haversian system.

Although the number of femurs is not yet large, it is large enough to reveal three types of bone formation — the lamellar, laminar and Haversian system.

1. The lamellar type is the simplest and is composed of several lamellæ of bone concentrically arranged around the medullary canal. Example, femur of frog.

2. The laminar type is more complex and is composed of several laminæ of bone concentrically arranged around the medullary canal. Each lamina consists of several lamellæ and is separated from adjacent laminæ by inter-laminar, concentric canals. Best example may be seen in the pig. Earlier forms — turkeys, peahen.

3. The Haversian system type is the most complex form and is composed of Haversian systems generally running parallel with the external and internal surfaces of the walls of the bone. The systems may be large or small, regular or irregular in shape, united by short lamellæ or laminæ of bone and enclosed or not enclosed by external and internal circumferential lamellæ. Best example, man. Other forms (but modified) may be seen in the sheep, dog, woodchuck, ox, wolf, goat, fox and rabbit.

The femurs of other animals are various combinations of these three types in different degrees of development and arranged according to the stress requirements of each. The structural units of the three types may be present in the femurs of many animals, but their developments, positions and proportions vary greatly in all. The types apparently appeared in the order given above. The lamellar, — frog, — laminar, — turkey, — family, and pure Haversian system in man.

The lamellar and laminar types characterize the larger number of femurs and are always well developed. This would be expected if they were the first to appear. Even in those femurs having very incomplete Haversian systems, the lamellæ and laminæ are completely formed.

A study of these bones shows a great diversity of structure and arrangement, wide differences in shape, thickness and hardness of walls and character of contents of the medullary canals. Some femurs are practically round, as those of the frog, turtle, crow, domestic chicken, skunk, owl, prairie dog. In some femurs the antero-posterior diameters are longest, as in the dog, pig, timber wolf, ox, wild cat, wild goose. In some the lateral diameters are longest, as in the domestic and wild turkeys, mallard duck, peahen, woodchuck, rabbit, sheep, cat, raccoon, mink, musk rat, opossum, man, goat, alligator, rat, fox. The largest number of femurs have the long, lateral diameters.

The walls vary in thickness. The peahen has the thinnest (and hardest) walls in proportion to the diameter of the bone, and the turtle the thickest.

The femurs of the turtle, alligator, peahen, owl, sheep, wild cat, goat, ox, pig, man are hard; of the wild goose, mallard duck, domestic chicken, dog, skunk, raccoon, mink and wolf are medium; of the frog, turkey, crow, prairie dog, woodchuck, rabbit, musk rat, opossum, fox, are soft. The degree of hardness is estimated by the grinding process in the preparation of sections. The contents of the medullary canals vary. The canals are empty in the frog, mallard duck, peahen, *musk rat*, *prairie dog*, and full in the turtle, domestic and *wild turkey*, *wild goose*, *crow*, *owl*, woodchuck, dog, rabbit, sheep, pig, cat, skunk, raccoon, mink, opossum, wolf, ox, man, goat, alligator, rat, fox, wild cat. That is, most canals are full. Some mammals are empty — musk rat and prairie dog — and some birds have full canals — wild goose, crow, owl, wild turkey. Two femurs have medullary trabeculæ of bone — peahen and musk rat; three have circummedullary cancellous bone — turtle, man and alligator. The external circumferential lamellæ are best developed and most prominent in the frog, cat, skunk, mink, raccoon, prairie dog, opossum, rat, wild cat.

The internal circumferential lamellæ are best developed and most prominent in the owl, opossum, musk rat.

The central complete Haversian systems are best developed in man, sheep, dog, woodchuck, ox, wolf, goat, fox, rabbit. They are undeveloped in the turtle, alligator, owl, wild goose, domestic chicken, turkeys, crow. Laminæ are best developed in the turkey, pig, peahen. They are absent in the chicken, skunk, mink, opossum. They are obliquely arranged in the rabbit and sheep.

The posterior ridges have the best developed Haversian systems. Nearly all femurs have two forms of lacunæ — long, narrow and oval, or round; and two forms of canaliculi — long, branching and bushy. Seven femurs are incompletely developed, that is, have incomplete Haversian systems, — turtle, alligator, owl, wild goose, mallard duck, chicken, crow. One is fully developed and of the Haversian system type — man. Eight are completely developed, but of a mixed type, that is, they have completely formed, lamellæ, laminæ and Haversian systems arranged in peculiar ways — sheep, dog, woodchuck, ox, wolf, rabbit, goat, fox. Four are laminar; ten lamellar.

Arranging the thirty femurs according to their types and structures, they fall into the groups as shown in table on next page.

It is rather unexpected that the femurs of these animals should fall into these classes. It may be noticed that man stands alone. Summary: Femurs differ in shape. Some birds of flight have full medullary canals, some poor flyers

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| Lamellar type. | Laminar type. | Incomplete mixed type. | Pure Haversian system type. | Complete mixed type. |
|---|---|---|---|---|
| Frog, cat, skunk, mink, raccoon, musk rat, prairie dog, opossum, rat, wild cat. | Domestic and wild turkeys, pig, peahen. | Turtle, alligator, owl, wild goose, domestic, chicken, crow. | Man. (The type usually drawn and described.) | Sheep, dog, woodchuck, ox, wolf, goat fox, rabbit. |

have empty canals, some mammals have empty canals. Some femurs are nearly solid, some have extremely thin walls, some have medullary trabeculæ of bone, most have none. Some bones are hard, some medium, some soft. Some have circummedullary cancellous bone; most have none. Some have wide external circumferential lamellæ; some, narrow. Some have wide internal circumferential lamellæ; some, narrow. Some have concentric laminæ; some, oblique, and some have none. Some have complete Haversian systems; some, incomplete. Some have thick, central rings of Haversian systems; some, crescents, and some, alternating rings of systems and laminæ. Some show the lamellar type; some, the laminar, and some, the Haversian system. No two are alike excepting those of the same species. There is no femur like the human. The particular femur examined differs from the usual description in that it shows the external circumferential lamellæ very poorly developed and present only at scattered intervals around the periosteal border of the bone. The central ring of Haversian systems reaches the surface for the most part, and occasionally a half system forms the outer boundary of the section.

There is, perhaps, no other tissue of the animal kingdom which indicates the species of animal to which it belongs as clearly as bone. Epithelium, muscle, nerve and other varieties of connective tissue cannot be easily distinguished as peculiar to or characteristic of any animal. Femurs may be grouped by their microscopic structures, and these are sufficiently constant to form some sort of a classification. Bone of repair is cancellous. One of the femurs of the frog had been fractured in the middle of the shaft; the two fragments — proximal and distal — had slipped by each other, and new bone of repair had formed around them. There were cell outbursts from the medullary canal through the walls of the proximal fragment which appeared to initiate the reparative process. The new bone of repair was cancellous bone, although there was none in the femur at the line of fracture. In places the meshes of the cancellous bone had been reduced in diameter by the formation of lamellæ around their walls, forming Haversian systems which were also absent in the femurs.

In the femur of the pig the inter-laminar canals widen at intervals by circular dilatations, around which two or three lamellæ are bent, forming small Haversian systems. These are two methods of system formation.

At the present time it is not possible to account for the varying bone structures on the basis of diversified function alone. A general biological law operating in harmony with a changing environment and establishing the type of the genus is essential.

For example, the femurs of the pig and turkey resemble each other closely. The os penis of the raccoon resembles the femur of that animal. The turtle has four laminæ alternating with three rings of incomplete Haversian systems.

The turkeys have fifteen to twenty concentric laminæ interrupted in the posterior and anterior walls by Haversian systems.

The wild goose has from four to ten external and internal lamellæ, anterior and posterior incomplete Haversian systems; internal laminæ and external Haversian systems in the inner wall.

The crow has six to eight external and two or three internal lamellæ with a wide central ring of Haversian systems.

The peahen has a concentric network of laminæ around the medullary canal and a network of trabeculæ extending from one wall of the canal to the opposite.

The owl has three to nine external and thirteen to twenty internal lamellæ — six laminæ in the outer wall and a central ring of incomplete Haversian systems.

The woodchuck has two external laminæ, two internal laminæ and a central heavy ring of irregularly shaped Haversian systems.

The dog has an outer wall of Haversian systems and an inner wall of Haversian systems alternating with laminæ.

The rabbit has five to eight oblique laminæ merging into concentric oblique Haversian systems and lamellæ.

The sheep has six external lamellæ widening into twenty laminæ, two internal laminæ and a central crescent of Haversian systems.

The pig has seventeen to thirty-five concentric laminæ interrupted in the posterior wall by Haversian systems.

The cat has twenty-three to forty-five external lamellæ, two to six internal laminæ and a central ring of complete Haversian systems.

The skunk has fourteen to seventeen external lamellæ, six to eight internal lamellæ and an irregular ring of Haversian systems.

The raccoon has fourteen to fifty external lamellæ, two internal to one half of the thickness of the wall of oblique laminæ and an irregular ring of Haversian systems.

The mink has fifty to sixty external lamellæ, twelve to twenty-five internal lamellæ and an irregular crescent of Haversian systems.

The muskrat has a few external lamellæ at intervals, nearly the whole of the wall of undulating internal lamellæ enclosing solid cylinders of bone, a few incomplete Haversian systems and a transverse network of laminæ in the inner wall.

The opossum has two wide rings of external lamellæ, a wide ring of internal lamellæ (two

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thirds of the wall) and a crescent of very incomplete Haversian systems.

The wolf has sixteen to twenty-one external lamellæ separating into four laminæ, six internal laminæ in the anterior wall, thick crescent of Haversian systems, and well-developed laminæ in the inner wall.

The ox has three wide concentric rings composed of irregularly shaped Haversian systems arranged in different directions, and enclosed by a few external and internal lamellæ.

Man has a few short external lamellæ at intervals, a wide central ring of Haversian systems and internal lamellæ arranged in cancellous bone.

The prairie dog has eight to fifteen external, six to twenty-five internal lamellæ and a narrow central ring of Haversian systems.

The goat has six to sixteen external, four to fifteen internal lamellæ, two or three laminæ and two rings of Haversian systems.

The alligator has no external lamellæ, three or four internal, four rings of incomplete Haversian systems alternating with four concentric laminæ.

The rat has six to ten external lamellæ, a few incomplete internal laminæ and a central ring of incomplete Haversian systems.

The fox has twenty to thirty external lamellæ, a heavy ring of internal laminæ and a central crescent of Haversian systems.

The wild cat has a wide ring of external lamellæ (two thirds of the width of the wall), three to thirty internal lamellæ and a crescent of Haversian systems.

It does not appear just what habits or conditions of environment call for lamellar type, laminar or Haversian system type of structure. Hardly any two animals are farther apart — apparently — than the pig and the turkey, and yet they have a common structure.

Looking over the femurs examined, the pure Haversian system type is shown in the smallest number of animals, the laminar in the next, while the lamellar comprises the largest number. Perhaps — in some cases — the principle of reversion has been introduced. Generally we are inclined to think of the Haversian system type as the one best adapted to support weight, but this does not work out in the pig.

The bones, furthermore, vary greatly in hardness, in contents, in relative thickness of walls and in shape. The study suggests a possible relation of pathological bone to their changeable factors. Deformities, changes in nutrition and growth may be governed by a failure of a bone to conform to the pure type.

It is the intention to continue the study, as it promises to widen the field of bone histology and possibly account for some of the individual variations in human femurs which are responsible for bone diseases.

The writer would be very glad to receive fresh femur of animals not mentioned in the list given above, and would also be glad to send, after Sept. 1, sawed rings of the femurs examined to any one who may wish to prepare them for study.

# Medical Progress.

## PROGRESS IN THE THEORY AND PRACTICE OF MEDICINE. GASTRIC AND DUODENAL ULCER.

BY FRANCIS W. PALFREY, M.D., BOSTON.

In recent years the study of gastric and duodenal ulcer has attracted much attention both from medical and from surgical investigators. To abdominal surgeons is largely due the credit for the inception of recent advances in these subjects, by observations possible only at operation which have called for a revision of our previous beliefs. These observations of surgeons have in turn stimulated the interest of physicians, and have led to renewed efforts on their part to explain the occurrence, and to perfect medical methods of treatment, of these conditions. The growing movement for experimental research has further shown its influence in investigations attempting to throw light upon the many unexplained points and disputed questions by studies upon animals. Much still remains in doubt. In fact, the pathological physiology of ulcers of the stomach and duodenum is still without conclusive explanations. Yet so much has been written of late in reports of careful research, both experimental and clinical, bearing upon the pathogenesis, recognition and management of cases of gastric and of duodenal ulcer, that a brief review of these reports seems desirable.

### ETIOLOGY.

Round ulcer of the stomach was first described as a clinical entity by Cruveilhier in 1836. Similar ulcers have since then been known to occur in the duodenum, but until recently duodenal ulcer was supposed to be relatively rare and was not given independent consideration. But from the findings of Moynihan,[1] of the Mayos[2] and their associates, of Codman[3] and of other surgeons, it has been established that duodenal ulcer is not rare, but, on the contrary, comprises the majority of all chronic ulcers of the upper digestive tract. Ewald,[4] Musser[5] and Hoover[6] dispute this, but the surgical evidence seems incontestable. Furthermore, it is shown that duodenal ulcers give sufficiently definite symptomatology and clinical course to warrant their separation from gastric ulcers into a class of their own. Thus, in discussing the etiology and also the diagnosis, prognosis and treatment of so-called peptic ulcers, while certain considerations apply equally to all such ulcers, the distinction between the two types, the gastric and the duodenal, must be borne in mind and the differences between the two are to be noted.

The pathogenesis of these ulcers has been the subject of much study in which the work of recent years has shown no abatement. Self-digestion has long been believed to play a part, but it has been amply shown that self-digestion cannot be regarded as more than a contributing cause since the mucosa of the normal living stomach and of

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the duodenum is immune to the digestive action of the gastric juice.[7] Some cause must be found to explain the failure of this normal immunity before ulceration by self-digestion can occur. This has been the object of recent experimental work, throwing a certain amount of light upon the plausibility of the various theories both old and new that have been suggested. The chief possibilities considered as prime factors in the etiology of gastric ulcer are as follows: (1) Some interference with the circulation of a portion of the stomach or duodenum; (2) some disturbance of innervation; (3) a local inflammation or manifestation of infection; (4) a secretory or motor abnormality of function; (5) a toxic or other influence from the blood.

Able discussions of the present state of our knowledge on this subject have recently been published by Mathieu and Moutier,[8] by Litthauer [9] and by Longcope.[10]

The theory of a circulatory abnormality, either arterial or venous, as cause of a local failure of the immunity of the stomach against self-digestion, first suggested by Virchow in 1853, and from then until now always in question, supported most notably by the work of Von Recklinghausen and of Cohnheim, has of late been investigated further by Fibich,[11] by Clairmont,[12] by Litthauer,[9] by Payr [13] and indirectly by Braun.[14] The first three of these investigators have dealt with the arterial supply. Fibich [11] reports that he was regularly able to produce in dogs an ulcer of the stomach which did not tend to spontaneous healing by ligation of smaller arteries of the stomach followed by excision of mucosa and cauterization with acid in the area which these arteries supplied. These ulcers he produced in order to test the effect upon their healing of gastro-enterostomy. Gastro-enterostomy in these experiments appears to have had a markedly beneficial effect. But this work of Fibich has been called in question by Clairmont,[12] who repeated the procedure of Fibich and found that the ulcers produced in his experiments differed essentially from clinical gastric ulcer in possessing a strong tendency to rapid spontaneous healing, and that gastro-enterostomy had no effect in accelerating the healing process. Litthauer [9] also repeated Fibich's experiments and also failed to confirm the results. Braun,[14] in investigating the safety of ligating arteries of the stomach to check hemorrhage, found that in dogs extensive ligations failed to produce necrosis. Litthauer [9] also found that a third of the stomach could be deprived by ligation of its afferent vessels without death of tissue. In other experiments, however, with extensive ligation of arteries until the stomach wall became livid, followed by excision and cauterization of mucous membrane, followed by the daily administration by the stomach tube of .37% HC solution, Litthauer found that chronic ulcers were produced in about a third of the animals so treated. These experiments taken together seem to show, as Litthauer concludes, that no certain method is yet known to produce chronic ulcers in dogs; these results, therefore, fail to support by analogy the arterial theory as a sole cause of gastric ulcer in man. Yet the rôle of interference with arterial circulation in connection with some instances of gastric and duodenal ulcer in man cannot be thus excluded. Sclerosis of arteries in the neighborhood of ulcers has been so frequently observed (Longcope,[10] Mayo,[2] Bunday [15]) as to establish strong suspicion that it may be still of etiological importance.

With regard to venous circulation, the work of Payr [13] is worthy of note. This work was undertaken in part to investigate the possibility of damage to the stomach by embolism or thrombosis consequent upon operation upon abdominal organs other than the stomach. Damaging of the veins of the omentum or mesentery by freezing or by hot solution, also injections of dermatol, of gelatine, of oil and of other substances into these veins, resulted in 50% of the experiments in lesions of the stomach, — hyperemia, hemorrhagic necrosis of mucous membrane, hemorrhagic erosions and ulcers. These lesions in certain instances contained the substances injected into distant veins, showing their embolic nature. Payr further demonstrated a possible mechanism for this retrograde embolism by tying the united trunk, draining two veins of the portal system, to simulate direct embolism or thrombosis, and showing that in consequence of obstruction of the main trunk the direction of the current in one of the branches became reversed.

Payr believes that in some instances digestive symptoms following abdominal operations are due to this process. His article suggests the question whether ulcers of the stomach which have been reported in connection with trauma,[16] with epigastric hernia,[17] with wounds of the urinary bladder [18] and with appendicitis [19] may not be produced by this mechanism.

The possible rôle of disorders of nerve supply was suggested by Stockton in 1892, and reiterated in a recent article,[20] suggesting an analogy between gastric ulcer and the perforating ulcer of the foot in tabes dorsalis and herpes zoster. This possibility has recently received support from the experimental evidence of Ophuls,[21] of Zironi [22] and of Van Ijzeren,[23] confirming the previous observation of Della Vedova [24] that section of nerves leading to the stomach was followed in a half of the animals (chiefly rabbits) so treated by necroses, hemorrhages and ulcers. Donati [25] and Lilla,[26] however, failed to obtain these results.

The theory that gastric ulcer may be due to an infective or irritative gastritis has long been discussed. The possible rôle of simple gastritis cannot be established or excluded, since, although some inflammatory changes occur in chronic ulcer, this has usually been regarded as secondary to the ulcer rather than primary. That acute ulcerations of the stomach may occur in a variety of infectious diseases is well recognized. But whether chronic ulcer may be caused remains uncertain. Of recent publications bearing upon this question may be mentioned that of Mahnert,[19] who advanced the theory that preceding appendicular infections may be an etiological factor,

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finding unquestionable chronic appendicitis in 23 out of 36 cases of proved gastric ulcer. But as Mahnert himself points out, this reasoning may also support Payr's suggestion rather than that of infection alone, since the appendicular inflammation might well give rise to retrograde venous embolism of the stomach. Many investigators have produced ulcerations of the stomach by injection of a variety of bacteria, but these ulcerations have been acute rather than chronic. Considerable attention has been attracted by the results published by Turck,[27] who claimed to have produced gastric or duodenal ulcers in all of a number of dogs previously kept confined in poor environment and later fed daily with cultures of Bacillus coli communis. His experiments, however, have been repeated by Bauer [28] with entirely negative results.

Kodon [29] has recently advocated the view that round ulcer is to be regarded as a tuberculide, reporting in 53 cases of gastric ulcer the presence of marked tuberculosis in 49 and of tuberculides in 5. He compares gastric ulcer with lupus. His evidence, however, does not seem of sufficient weight to justify serious consideration of so radical a suggestion.

In this connection may be mentioned a form of infection which, while not producing true peptic ulcer, still, as is emphasized by Hoover,[6] may cause a clinical picture indistinguishable from it, namely, syphilis. Curtis [30] and Kohn [31] have each reported a case of syphilis of the stomach with pathological examination. Hoover reports 5 cases simulating gastric ulcer which promptly recovered under antisyphilitic treatment.

Hypersecretion, first demonstrated by Riegel in 1886, in cases of gastric ulcer, has been generally held to be incapable in itself of producing gastric ulcer, yet in the experiments of Bolton [32] it is shown that artificially induced extreme hyperacidity in animals can produce gastric ulcer, and Weinland [33] has shown that excessive acidity can overcome the action of the protective antiferment to be mentioned later. Grandauer [34] has emphasized the close clinical relation between hypersecretion and ulcer. It is further possible that hypersecretion, to which is added the presence of a disorder of motor function, may be of greater effect. Frouin [35] reports that repeatedly and regularly, when he has fed to experimental animals with an isolated stomach pouch, food containing an excess of sodium chloride, and has left the pouch for a time without evacuation, the contents have become hemorrhagic, which he takes to be evidence of erosion or ulcer, whereas the contents of the pouch in similar animals fed with normal amounts of NaCl could be left in much longer and with greater distention of the pouch without showing any such abnormality. Moutier [36] also describes the frequent spontaneous occurrence of ulcers closely resembling the *ulcus rotundum* of Cruveilheir in the isolated stomach pouch of dogs. In these animals at operation great care had been exercised to avoid interference with vessels or nerves. Codman,[37] dealing only with questions concerning the duodenum, has published an extremely suggestive clinical article attempting to establish a connection between duodenal ulcer and chronic constriction of the duodenum by the root of the mesentery, supposing this to cause an abnormally long period of contact between duodenum and the digestive fluids. At operation he observed such a condition, with recovery following the relief of the constriction, which was due apparently to an enteroptosis. In this connection may be mentioned Czernecki's [38] report of the occurrence of gastric ulcer in a mother and in her four adult offspring, all presenting marked visceral ptosis.

But aside from disturbances of long-recognized functions of secretion and of motility, other considerations have been brought to attention. Kauffmann,[39] supported by Aldor,[40] has attempted to show that a deficiency of gastric mucus is found in gastric ulcer and that the disease is due to lack of mucus as a protection against the action of the gastric juice. More attention has been attracted by application of the work of Weinland,[33] who demonstrated in extracts of gastric mucosa and of intestinal parasites which live in immunity to digestion an *anti-ferment* which has the power of inhibiting peptic digestion. Although this is disputed by Von Klug,[41] Katzenstein,[7] Stockton [20] and others regard the deficiency of this antiferment as the essential factor in the production of ulcer by self-digestion, Stockton [20] suggesting that this deficiency is in turn due to abnormality in innervation.

The last theory, that gastric ulcer is due primarily to the presence of toxic or the absence of needful constituents in the blood or body fluids, originated long ago in the recognition of the frequent coexistence of ulcer with chlorosis and of the occurrence of acute ulcer in intoxications. The action of the toxic substances in producing experimental ulcers of the stomach has been studied recently by Rosenau and Anderson,[42] who demonstrated the production of lesions of the stomach in guinea pigs injected with diphtheria toxin; by Gay and Southard,[43] who found gastric ulcers following the toxic injection in anaphylaxis experiments; and by Rehfuss,[44] who succeeded in producing ulcers of the stomach in 35 out of 41 animals by injection of various toxic agents. Beginning with the venom of the gila monster, Rehfuss was equally successful with pilocarpine, atropine, paraldehyde, phenol, chloroform and $MgCl_2$. He concludes that in severe intoxication by a great variety of agents ulcer may be produced. He further showed that when the stomach was injected with sodium bicarbonate in these experiments an ulcer was less likely to develop, appearing in but 6 out of 30 animals. This is taken as evidence that autodigestion is an essential part of the process. Litthauer [9] experimented with pyronin injections, aiming to test the effect of hemoglobinemia, but without striking results.

Of great interest is the work of Bolton,[32] who was able to produce ulcers of the stomach by means of a gastrolytic serum. He prepared this serum from animals injected with emulsions of

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stomach mucous membrane; the serum of these animals injected into other animals resulted in the formation of ulcers of the stomach. Like the ulcers in Rehfuss' experiments, these failed to occur if the acid of the gastric juice was neutralized. Hort,[45] basing his argument chiefly on Bolton's work, has propounded the theory that gastric ulcer and chlorosis are due primarily to a blood disease, the essence of which is the presence of a toxic substance exerting its action both upon the gastric mucosa and upon the blood corpuscles. His evidence, however, is far from sufficient.

In spite of all these data, however, we are still far from a clear solution of the problem. Even at first sight such an array of conflicting evidence tends rather to confuse than to enlighten. Yet on closer consideration the conclusions reached by Mathieu and Moutier[8] seem highly plausible. It has been seen in the accounts of experimental work mentioned in the previous paragraphs that ulcerations of the stomach may result from interference with circulation, either arterial or venous, from interference with innervation, from infections, from extreme hyperacidity of contents, especially where the contents are long retained, from deficiency of normal protective influences (mucus or antiferment), and from a variety of toxic influences. In several at least of these sets of experiments the co-operation of acid gastric juice was essential to the production of ulceration. A co-existence of ulcer with chlorosis and debility on the one hand and with an overwrought nervous system is mentioned by various authors. Mathieu and Moutier believe that the best solution of the problem lies in the belief that the ulcerations in the first place may be due to a variety of causes, — some to one, some to others, — but that when once an ulceration is produced by any cause in a portion of the alimentary tract bathed for prolonged periods by active digestive fluids, the combined influences of autodigestion, of secondary gastritis with interstitial lymphangitis, and a lowered state of bodily resistance, may convert an ulceration of any type into the typical round ulcer of Cruveilhier.

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*(To be continued.)*

# Reports of Societies.

## AMERICAN SURGICAL ASSOCIATION.

Meeting at Washington, D. C., May 3, 4, 5, 1910.

[Continued from No. 15, p. 588.]

### REPORT OF A CASE OF HEPATICO-DUODENAL ANASTOMOSIS.

George Emerson Brewer, M.D., of New York, N. Y.: The patient was admitted to the Roosevelt Hospital suffering from acute cholecystitis. Following a cholecystectomy there occurred extensive sloughing of the wound, which was followed by a complete biliary fistula. At the end of seventy-five days, as no bile was passing into the bowel, the abdomen was reopened and the fistula followed down to the common hepatic duct. As no trace of a common duct could be found even after reflecting the duodenum and exposing the head of the pancreas, it was assumed that it had been destroyed by the suppurating process which followed the primary operation. A rubber drainage tube three inches in length was introduced into the hepatic duct and also through the duodenum by a stab wound at its upper border, and was secured in these two situations by two purse-string sutures. A mass of omentum was then wrapped around the tube, extending well beyond its introduction in the hepatic duct and duodenum with a view to create a new common duct after the manner suggested by Sullivan. The abdominal wound was closed, a small cigarette drain being allowed to remain at its upper angle. From that time no bile appeared in the wound. The bowels moved on the third day as the result of an enema, and the stools contained an abundance of bile. The reconstructed duct continued to functionate until after the man's discharge from the hospital some four or five weeks after the last operation. Since then he has had two or three attacks of fever associated with jaundice, which would disappear in two or three days. At the present time he is still jaundiced, although some bile is present in the stools.

Dr. Brewer asked the advice of the members of the Association as to further treatment in case the newly constructed duct became totally occluded.

### DISCUSSION.

Dr. Alexander H. Ferguson, of Chicago: Since the observation that if all the bile is directed into the hepatic flexure of the large bowel the patient does not suffer from the lack of bile (which observation I believe was first confirmed by Mayo Robson), I have followed this technic in at least half a dozen cases with extremely gratifying results.

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Dr. Joseph C. Bloodgood, of Baltimore: I would like to report an anastomosis of small intestine by opening the transverse colon as in posterior gastroenterostomy, sewing a long loop of the small intestine through the transverse colon, and suturing it to the gall bladder.

RESECTION OF THE PANCREAS, WITH REPORT OF A CASE.

J. M. T. Finney, M.D., of Baltimore, Md.: The principal object of this communication is to record the successful removal of a primary solid tumor of the pancreas. The operation involved the resection of the entire middle portion of the gland, leaving only a small piece of the head and the tail respectively, and necessitating a reunion of these segments by suture. A search of the literature reveals records of but sixteen other undoubted cases in which the pancreas has been resected, either in whole or in part, for primary tumor of the gland.

A review was given of the recent advances of surgery of the pancreas due to experimental and clinical work. The difficulties of operating upon the pancreas were referred to and the best methods of avoiding and controlling the same. The best methods of dealing with pancreatic fistulæ were next taken up. The diagnosis of primary solid tumors of the pancreas is made usually by exclusion, and it is not always possible beforehand. Different routes for attacking pancreatic tumors were discussed and the various operations which had been suggested were described. These were so difficult and dangerous as to prevent their general use.

The statistics of the operation for primary tumor of the pancreas were given. Of the 17 cases, 12 occurred in females and 3 in males. Carcinoma occurred 10 times, sarcoma 4, fibro-adenoma 2, cystic adenoma once. Of the 17 cases, 9 recovered and 8 died. In 2 instances the pancreas has been reported as having been removed *in toto*. Three times the gland was completely divided into two parts, and the remaining portion sutured. All 3 cases recovered.

DISCUSSION.

Dr. M. L. Harris, of Chicago: I would like to mention a case of a policeman shot by a 38 caliber bullet which entered just below the twelfth rib on the left side and was found just beneath the skin a little to the right of the median line between the eighth and ninth ribs. The track of the bullet from before backward was through the right lobe of the liver, the lesser curvature of the stomach, the middle of the pancreas, practically bisecting the organ, and the left kidney. The stomach was sewed up, then the pancreas, and as close an approximation of parts made as possible. Drainage front and back. Fistula resulted but closed in about three months and patient fully recovered.

Dr. G. E. Armstrong, of Montreal: With regard to the mobility of pancreatic tumors, I would like to mention a case in which there was a large pancreatic cyst which for a long time, because of its mobility, was considered to be a growth in the stomach.

Dr. Willy Meyer, of New York: I have had two cases in which the tail of the pancreas was tightly adherent to the existing tumor, and here I put a piece of chromicized gut around it and divided the distal end with the Paquelin cautery. Bost patients recovered.

Dr. Rudolph Matas, of New Orleans: I wish to report an additional case of unusual character, thrombosis of the splenic artery incidentally involving the pancreatic arterial supply, causing degeneration of the organ from the head to the tail, associated with multiple tumor formation in the spleen. The spleen and three quarters of the pancreas were removed and the patient recovered from the operation, dying about three years later from a slow fever.

CONGESTION OF THE LOWER LOBE OF THE RIGHT LUNG AN EARLY SYMPTOM IN APPENDICITIS.

John B. Roberts, M.D., of Philadelphia, Pa.: The author suggested the possibility of a secondary congestion of the lower part of the right lung being found in a considerable number of cases of acute appendicitis. He spoke of this condition being a possible aid in the diagnosis of acute appendicitis when the symptoms of the latter were not yet very definite. A point was made that this observation did not refer to secondary pleuritis, and pulmonary involvement occurring in the late stages of appendicitis. Such inflammation from septic invasion secondary to advanced appendicitis was an entirely different process. The idea of the author evidently was that appendicitis, and perhaps other intra-abdominal inflammations, might cause atelectasis of the right lung, or a true congestion, because of the insufficient action of the diaphragm upon the right side. This spasm or immobility of the right side of the diaphragm he compared with the tonic spasm of the muscles overlying the appendix in the front of the abdominal wall. It was, however, also suggested that the engorgement of the base of the right lung in cases of appendicitis might be due to a simultaneous infection of both the appendix and the lung by the pneumococcus or other invading organism. The well-known fact that pneumonia is sometimes accompanied by pain and muscular rigidity in the right iliac fossa was mentioned, as was also the clinical observation that acute appendicitis may in its early stages give rise to pain in the right lower thoracic region. The early congestion of the right lung, which Dr. Roberts thinks he has found in the early or initiatory stages of appendicitis, might also occur from inflammation of the gall bladder or cellulitis around the upper pole of the kidney. The paper referred to somewhat similar observations by other writers, which seemed to at least partially confirm the correctness of the value of this new point in the diagnosis of appendicitis.

VACCINE THERAPY AS AN ADJUNCT TO SURGERY.

John B. Deaver, M.D.; John C. DaCosta, Jr., M.D., and D. B. Pfeiffer, M.D., of Philadelphia, Pa.: There has been established at the German Hospital a special department of vaccine therapy. In addition to its well-known and satisfactory use in suppurative affections of the skin and other forms of minor chronic infection, this form of treatment has been used as an adjunct in the treatment of more severe surgical infective conditions.

Vaccines did not prove of service in 3 cases of streptococcic septicemia in which the treatment was begun late. Four cases of severe staphylococcic septicemia recovered, improvement in each case beginning with the initiation of the vaccine treatment. Eight cases of severe septic intoxication without demonstrated bacteremia were treated by drainage and vaccines. Two were *in extremis* when treatment was begun and died shortly afterwards. The remainder recovered. Five of the cases were streptococcic infections.

Improvement was also noted in a miscellaneous group of cases comprising persistent sinuses, cystitis, thrombosis, etc. Not all cases, however, gave a definite response. The dosage varied from 25,000,000 to 750,000,000. The sicker the patient and the less satisfactory the response, the smaller and less frequent should be the dose. Streptococcus also was used in smaller dosage than staphylococcus.

On the basis of these results the paper concludes:

Specific vaccine treatment in our hands has not

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proved of benefit in the later stages of streptococcic septicemia.

Staphylococcic septicemia has been treated with most favorable results at all stages.

Septic intoxications without demonstrated blood invasion in a majority of the cases display general and local improvement under the use of vaccines if given early; the later the treatment, the less certain and satisfactory the result.

Localized and persistent suppurating lesions are sometimes markedly benefited by vaccines.

Surgical procedures for the relief of infectious conditions should be reinforced by vaccine treatment, which should be begun as early as is consistent with the case, and preferably by autogenous organisms.

No hospital can be considered fully equipped which is not prepared to supply this form of treatment in conjunction with established measures.

### THERAPY BY BACTERINS AND TUBERCULINS IN MIXED SUPPURATIVE BONE AND JOINT DISEASE.

De Forest Willard, M.D., and B. A. Thomas, M.D., of Philadelphia, Pa.: The authors recount their experience of two years' duration in the treatment by bacterins and tuberculins of tuberculous bone and joint disease, complicated by mixed pyogenic infections. The feature of the treatment consists in the alternation of bacterin and tuberculin inoculations in the mixed suppurative type of the disease, as spinal caries, tuberculous hip-joint disease, etc. They do not contend that bacterin therapy is a "cure all," nor that when indications for surgical intervention exist, they can be disregarded and active immunization substituted. They wish, however, to emphasize the fact that the *accessory* employment of bacterin and tuberculin in certain cases stimulates the tissue cells of the organism to the production of specific antibodies to assist the bodily defenses in antagonizing and combating the given infections. On the other hand, the incompetent, inexperienced and careless use of these measures will not only fail to effect cure, but will inevitably lead to disaster and thrust a therapeutic measure of worth into disrepute. Bacterins, particularly tuberculin, are more potent agents for evil than for good, unless wisely administered. They are invaluable aids in competent hands, and when so employed these cases do better than those treated without bacterins; their detention in the hospital is shortened, and complications, if they occur, are fewer and less severe.

The authors present two definite clinical types of disease illustrated by charts, in which therapy by bacterins and tuberculins is recommended. The first type is represented by the case in which already at the time of operation a mixed infection of hematogenous or exogenous origin has been superimposed upon suppurative tuberculous caries. The second type is manifested in the evacuation and drainage of a "cold abscess," in which case almost invariably, after a lapse of fifteen to twenty days, the temperature suddenly rises and symptoms of a mixed infection ensue.

These types of disease are of a serious character, not those mild cases which would recover following simple incision and evacuation, nor those neglected ones of prolonged suppuration, characterized by bacteremia, grave sapremia and amyloid disease, but those with chronic localized processes, the treatment and prognosis of which have been greatly handicapped by the intervention of various pyogenic bacteria.

The authors have found that in the course of weeks the various pathogenic bacteria isolated from the suppuration vary, and for that reason they insist upon the employment of autogenous bacterins, the pus being cultured and recultured at least monthly. As soon as the patient's temperature falls to 100° or preferably lower, under the administration of bacterins, inoculations with tuberculins, either alone or alternating with bacterins for a time, are begun. They conclude, judging from the cases under their observation, that better results have attended the process of active immunization when, just as in tuberculin therapy pure and simple, the treatment has been commenced with relatively small bacterial inoculations, progressively increased to the therapeutic limit, rather than by recourse to large dosage, thereby in the former case establishing immunity, and in the latter avoiding anaphylaxis.

Studious observations of the clinical symptomology have always sufficed to control the treatment, the opsonic index proving not only impractical, but unreliable.

#### DISCUSSION.

Dr. J. M. T. Finney, of Baltimore: In regard to the use of vaccines in chronic infections of the bladder from the colon bacillus, I would mention a case in which, after every other method had failed, injections were followed by the most astonishing results, the bladder symptoms all practically disappearing.

Dr. Willis G. Macdonald, of Albany: I would like to call attention to the extreme importance of not giving too large a dose of vaccines, as I have found this regulation of the dosage very troublesome in those cases in my experience.

Surgeon-General Sternberg, of Washington: It is impossible to doubt that vaccine treatment is beneficial in a certain class of cases, but it is difficult to understand why it should be. You have a certain specific micro-organism in the blood in large numbers, producing toxic products, and why the introduction of a comparatively small number of the same micro-organisms under the skin should have such a potent effect in arresting the progress of the disease is to me inexplicable.

Dr. L. L. McArthur, of Chicago: I want to call attention to the tuberculin treatment in essential hemorrhage of the kidney. Treatment with the autogenous vaccine of the colon bacillus in several such cases has been productive of a cure, and I consider this a most beneficial treatment in this condition.

Dr. John B. Murphy, of Chicago: The essential hemorrhage of the kidney, the essential hemorrhage of the uterus occurring in girls under twenty with tuberculous histories, respond marvelously to proper dosage with tuberculin. Great assistance is rendered by this treatment in cases of bone tuberculosis. There is, however, no more treacherous and dangerous a drug than tuberculin if improperly given. As a stimulant, and as an aid to surgical tuberculosis, I know of nothing so good when the treatment is carefully administered.

Dr. Joseph C. Bloodgood, of Baltimore: I have had no experience in the vaccine treatment, but would like to suggest in regard to the essential hemorrhage of the kidney that a more simple serum be tried first. The professor of pathology at Tufts College has demonstrated the rapidity with which blood serum of all animals will check hemorrhage, so perhaps it is some antibody in the serum and not the organism that checks the hemorrhage when tuberculin is used in these cases.

Dr. Joseph A. Blake, of New York: I have been employing the vaccine treatment pretty persistently, and in chronic infections have found the autogenous vaccines of great benefit.

Dr. Arthur Dean Bevan, of Chicago: From my limited knowledge I would consider it too early at this time to arrive at any definite conclusions with regard to the value of this treatment. I have been particularly interested in the application of the vaccine treat-

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ment to tuberculosis of the kidney and mixed infection of tuberculosis of the colon, and although I know of cases which under good management with this treatment have gone on to recovery, I also know of cases which without the vaccine treatment also recovered.

Dr. Francis B. Harrington, of Boston: I have seen some cases in which autogenous vaccines have been of great benefit, and also some cases in which they were productive of great harm.

Dr. Harry M. Sherman, of San Francisco: We are using tuberculin more and more in the Children's Hospital. With regard to the vaccine treatment, we have had no success with the streptococcus infection.

Dr. Emmet Rixford, of San Francisco: I would like to mention a case of tuberculous anal fistula, tuberculosis of the spinal cord and tuberculosis of the wrist which under treatment with tuberculin was completely restored to health. It has been two years since the treatment, there is now no sign of tuberculosis, and the patient has gained 40 lb. in weight.

Dr. James E. Moore, of Minneapolis: I have been disappointed in the serums for the treatment of acute infections. In tubercular cases I have had better results. It is very essential that these treatments should be carried out only by those who know how to use them.

Dr. Charles A. Powers, of Denver: In chronic infections, especially the chronic staphylococcic infections, the autogenous vaccines have not given me the encouraging results which many others have obtained, and I, therefore, attribute this to faulty methods.

Dr. Charles H. Mayo, of Rochester, Minn: In regard to the vaccine treatment, I would say that I have had very little experience with it, but I have had one case of colon infection of the bladder and kidney in which the autogenous vaccine has proved of benefit.

Dr. John B. Deaver, of Philadelphia (in closing): The toxin treatment is most satisfactory if used judiciously. Like all good surgical measures, it must be instituted early to obtain the best result. The dosage is most important and should be carefully studied and regulated to the individual case.

Dr. De Forest Willard, of Philadelphia (in closing): There are four things to remember in the use of tuberculin. First, tuberculin is a potent agent for evil as well as for good. It must be used carefully and in careful hands. Second, if a stock vaccine is used by incompetent men, the treatment will have disastrous results. Third, the dose must be exceedingly small, for the smaller the dose and the longer time consumed in the treatment, the more certain the beneficial results. Fourth, it is by no means a substitute for surgical procedures.

### THE STUDY OF THE ETIOLOGY OF CANCER BASED ON CLINICAL STATISTICS.

Isaac Levin, M.D., of New York, N. Y.: The investigations are based upon a clinical study of 4,000 cases of carcinoma and sarcoma collected from several large hospitals in the country, the analysis of which showed many results of interest. The greater frequency of the disease in women is due to the prevalence of cancer of the uterus and the female breast. The other organs become affected more frequently in men, which fact may be due only to the greater subjection of the latter sex to the different injurious influences of civilized life. Cancer, while considered to be a disease of an advanced age, appears, according to this investigation, to occur in many instances in people who have not yet reached middle age. Childbearing does not seem to have any direct connection to the causation of cancer. Another point of interest is the fact that American Indians rarely contract the disease. The data on the influence of occupation in the etiology of the disease were very defective and no conclusion could be derived from them. It is expected that with the co-operation of the profession better results will be obtained in this connection in the future work. The presence of a preceding local disease in the organ affected with cancer, while of certain importance, cannot be considered as the main etiological factor. Hereditary disposition does not seem to have an influence upon the causation of the disease sufficient to warrant the great dread of the lay public before this hereditary trait.

In conclusion, the statement may be made that while this investigation cannot claim to have reached any final result in the elucidation of the etiology of cancer, it appears evident that a local trauma or previous disease of the affected organ is of less importance in the causation of cancer than the increased vulnerability and lessened resistance of the organism caused by the ever-increasing strain of the modern life. This is certainly the only explanation that may be offered for the increasing frequency of the occurrence of cancer in civilized communities. That this increase is not only apparent is very evident from the mortality statistics of the United States in 1907, which shows a ratio of 73.1 deaths from cancer per 100,000 population, as compared with the ratio of 70.8 in 1906.

It is expected that this statistical cancer research, which is still being continued, may arouse the interest in the matter in the members of the profession, who are requested to fill out the schedules, which may be obtained on demand, and offered free examination of tumor tissue.

#### DISCUSSION.

Dr. Charles A. Powers, of Denver: I want to call attention to the formerly prevalent idea that youth was a bar to carcinoma. During the past year I have had no less than three patients under twenty-four years of age suffering from epithelioma.

### ON THE SIMULATION OF NEOPLASMS BY INFLAMMATORY PROCESSES.

C. A. Hamann, M.D., of Cleveland, Ohio: The resemblance, clinically, between certain inflammatory processes and tumors, leading to errors in diagnosis.

Chronic osteomyelitis and other forms of bone disease resulting in enlargement of bones; formative osteitis, as the result of various irritants, leading to the production of swellings which simulate neoplasms. Methods of differentiation. Myositis ossificans, circumscribed enlargements of muscles, myositis fibrosa.

Inflammatory thickening around foreign bodies in abdominal wall ("ligature and foreign body tumors"), inflammation of the omentum after ligation of portions of it.

Pseudo-neoplasms of stomach. Inflammatory pseudo-neoplasms of intestines; peri-appendicular swellings; diverticulitis, associated with the formation of connective tissue masses; tumors of the rectum and perirectal tissues, inflammatory in origin. So-called disappearing tumors are in many instances inflammatory pseudo-neoplasms.

Chronic mastitis in some of its various forms.

#### DISCUSSION.

Dr. Harry M. Sherman, of San Francisco: I would like to report an instance in which I through a mistaken diagnosis removed an inflammatory mass believing it to be sarcoma including the parotid gland. A radical operation was done, beginning with the clavicle, with removal of all the tissues up to and including the parotid gland, following the report on a section of the growth sent to the pathologist that it was

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probably of sarcomatous origin. When the whole mass was sent to the laboratory for examination, however, it was proven to be an inflammatory mass in the center of which was a normal parotid gland. In the light, however, of no clinical symptoms of syphilis and a negative Wassermann, and a definite tumor mass, the evidence against syphilis in the diagnosis was enough to justify the operation for sarcoma.

### A REVIEW OF ONE HUNDRED AND TWENTY RESECTIONS OF THE RECTUM FOR CANCER.

WILLIAM J. MAYO, M.D., of Rochester, Minn.:

| | | |
|---|---|---|
| Total number of resections of the rectum for cancer in St. Mary's Hospital from April 21, 1907, to Dec. 31, 1909, | | 120 |
| Males, | 63 | |
| Females, | 57 | |
| Age of eldest, | | 81 |
| Age of youngest, | | 27 |
| Average age, | | 52.12 |
| Perineal route: | | |
| Perineal resection, | 11 | |
| Quénu-Tuttle, | 22 | |
| | — | 38 |
| Harrison-Cripps, | 5 | |
| Kraske, modified, | 51 | |
| | — | 56 |
| Posterior route: Resection continuity, | | 5 |
| Abdominal combined: | | |
| Combined, | 20 | |
| Combined with permanent colostomy, | 6 | |
| | — | 26 |

*Operative mortality.* — This includes all cases dying in the hospital following operation without regard to cause or length of time. Three deaths occurred from exhaustion more than four weeks after operation, one from pulmonary embolus and one from apoplexy.

| | | |
|---|---|---|
| Total number, | | 120 |
| Mortality, | | 20.16% |
| Total number during 1908–9, | | 44 |
| Mortality, | | 4.9% |
| Amount of bowel removed: | | |
| Lower rectum, | 5 | |
| Middle rectum, | 5 | |
| Entire rectum, | 75 | |
| Entire rectum and part of sigmoid, | 32 | |
| Entire rectum, part of sigmoid, uterus, ovaries, tubes, part of vagina, | 1 | |
| Rectum and prostate, | 2 | |
| Total, | | 120 |
| Pathologist's report: | | |
| Carcinoma, | 119 | |
| Sarcoma, | 1 | |
| Total, | | 120 |
| Operated upon more than five years ago, | | 32 |
| Present condition known, | | 17 |
| Alive and well (2 abdominal [1 over nine and three-fourths years; 1 over five years]; 2 perineal [1 over nine years; 1 over seven and three-fourths years]), | | 4 |
| Operated more than four years ago, | | 41 |
| Present condition known, | | 26 |
| Alive and well (4 abdominal, 3 perineal, 6 posterior), | | 13 |
| Operated upon more than two years ago, | | 82 |
| Present condition known, | | 63 |
| Alive and well, | | 26 |
| Operated upon more than one year ago, | | 102 |
| Present condition known, | | 82 |
| Alive and well, | | 36 |
| Operation less than one year ago, | | 18 |

(*To be continued.*)

## Book Reviews.

*Prophylaxis and Treatment of Syphilis.* By GEORGE M. KATSAINOS, M.D. New York: The Phoenix Press. 1910.

This volume written in Greek is addressed primarily to Greeks resident in the United States, and is intended presumably for the laity rather than for the profession, since its purposes, as stated in the preface, are to teach the prophylaxis of syphilis, to convince syphilitics of the importance of perseverance in treatment, and to persuade them to abstain from marriage until their disease is no longer communicable. In accordance with this plan there are interesting popular chapters on the history, distribution and spread of syphilis, its natural phenomena, its etiology, and its modes of communication. The section on prophylaxis is the longest in the book. Apart from the matter of ethics, it may be questioned whether the suggestion of mechanical preventive measures against genital infection may not do positive harm by inspiring a false sense of security in their use. The instruction on the avoidance of extragenital infection, however, seems altogether desirable, and the chapters on the hygiene of the syphilitic and on syphilis and marriage contain much valuable dogma. In conclusion the "syphilitic's decalogue" sums up the rules and duties of the patient in admirably concrete, succinct and emphatic form.

*The Diseases of Women:* A Handbook for Students and Practitioners. By J. BLAND-SUTTON, F.R.C.S. Eng., Surgeon to the Middlesex Hospital, and Senior Surgeon to the Chelsea Hospital for Women; and ARTHUR E. GILES, M.D., B.Sc. Lond., F.R.C.S. Edin., Surgeon to the Chelsea Hospital for Women and Gynecologist to the Tottenham Hospital. Sixth edition, with 123 illustrations. New York: Rebman Company.

The sixth edition of this excellent small textbook comes to us with only eighteen pages more than the fifth edition published four years ago. In the latest volume there is a short chapter on "Fibrosis Uteri," summarizing the work of Bland-Sutton, Palmer Findley and Gardner and Goodall in this affection, and also a chapter on "Adenomyoma of the Uterus." Other new features are a short chapter on "The Vermiform Appendix as a Pelvic Organ" and one on "Injuries of the Ureters in the Course of Pelvic Operations and their Treatment," and an addition to the chapter on "Injuries of the Uterus," describing, in addition to lacerations of the cervix, gynecological injuries such as perforation during curetting, and obstetrical injuries, with their treatment.

There are several emendations to the text and new illustrations here and there, one of them in color. The book is well written, suitably illustrated, is small and easy to handle, and is not burdened with references. It is plain to see why it has proved acceptable to a large number of readers.

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THE BOSTON

# Medical and Surgical Journal.

THURSDAY, OCTOBER 20, 1910

*A Journal of Medicine, Surgery and Allied Sciences, published at Boston, weekly, by the undersigned.*

Subscription Terms: $5.00 *per year, in advance, postage paid, for the United States, Canada and Mexico;* $6.50 *per year for all foreign countries belonging to the Postal Union.*

*All communications for the Editor, and all books for review, should be addressed to the Editor of the Boston Medical and Surgical Journal,* 809 *Paddock Building,* 101 *Tremont Street, Boston.*

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101 Tremont Street, Boston, Mass.

## DR. CRILE'S ETHER ADDRESS.

The sixty-fourth anniversary of Ether Day was appropriately observed last Saturday, Oct. 15, at the Massachusetts General Hospital. The principal speaker at the exercises was Dr. George W. Crile, of Cleveland, whose address will be printed in full in a later issue of the Journal.

Dr. Crile showed not only excellent judgment but great courtesy to the hospital and to the medical profession of Boston in selecting this occasion to present the results of his valuable and scholarly research into certain problems connected with anesthesia. His investigations demonstrate by experimental evidence that so-called surgical shock represents the exhaustion of nerve-cells by discharges of energy which take place under the stimuli of operative trauma, even though general anesthesia prevent their conscious perception and motor manifestation. This exhaustion is shown by morphologic changes in the cells precisely similar to those produced by protracted muscular exertion. That such exhaustion may also be caused by emotion is demonstrated by the occurrence of the same morphologic changes in fear, which occasions discharge of nerve energy without motor phenomena. These observations Dr. Crile then correlates and explains on the basis of phylogenetic association, whereby the cumulative experience of individuals through countless ages of evolution has developed in the species not only the power of such automatic discharge of nerve energy in response to the deleterious stimuli of environment as shall tend best to preserve the individual from injury, but also the appropriate mechanism, the "nociceptors," by which such stimuli are received and transmitted. To prevent the exhaustion, the surgical shock, due to this unconscious discharge of nerve energy under the stimuli of operative trauma, as under the traumatic stimuli of the struggle for existence, it is necessary to block the afferent path of these nociceptors; and this, Dr. Crile has demonstrated experimentally, may be done by cocaine, the use of which prevents the stimuli from reaching the brain and causing there the responsive discharge of energy with its consequent morphologic cell changes representing exhaustion. Inhalation anesthesia, then, to use one of the many happy phrases with which Dr. Crile throughout illumined his exposition, "is only a veneer"; it obscures superficial consciousness of pain but does not penetrate deep enough to check the exhausting discharges of nerve energy which phylogenetic habit produces in the individual in response to "noci-associations" developed from experience of the traumatic stimuli of evolution. To the ideal surgical condition in which such exhaustion is prevented both by cocaine blocking and by the tactful immunization of fear in the patient, Dr. Crile applies the term "anoci-association." This condition, he believes, though not necessary in the majority of surgical procedures, is desirable and obtainable to a measurable degree in cases which for any reason are "poor surgical risks," and especially in the operative treatment of Graves' disease.

Dr. Crile's address, therefore, does not merely present a piece of laboratory research, but by luminous philosophic deduction rationalizes the data of that research and applies them to the solution of important practical problems in surgery. The last word on anesthesia was not spoken when the safety of ether as an anesthetic agent was successfully demonstrated in the old dome in 1846; and there is no occasion more appropriate than the anniversary observance of that momentous event to make known new discoveries that may still further contribute to the relief of suffering in man.

## PROGRESS OF ANTITYPHOID INOCULATION.

In the issue of the Journal for July 21, 1910, we published an editorial on the "Advisability of Antityphoid Inoculation," in which we advocated the use of this means of protection by "all whose regular work or whose recreation during the summer season may expose them to unusual risk of typhoid infection." An article by Major George H. R. Gosman, of the United States Army Medical Corps, in the *Journal of the American Medical Association* for Oct. 1, reinforces this suggestion

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and recommends even more extensive employment of antityphoid inoculation.

After a summary of the work on this subject previously done in other countries, Dr. Gosman points out the significant fact that of 8,510 cases inoculated by United States Army medical officers up to June 1, 1910, not a single one has since developed typhoid fever, in spite of varied exposure, whereas in the remainder of the army, among unprotected persons exposed to similar conditions, there have been in the same time over 200 cases of typhoid. The same favorable results are reported by other observers who have employed the typhoid vaccine prophylactically. At the Massachusetts General Hospital during the past year, since the beginning of systematic inoculation of all persons coming in contact with typhoid patients, not a single case of typhoid has occurred among nurses or ward tenders. This is the first year in which there have been no such cases.

The importance of these facts seems very great. It has been fairly demonstrated that antityphoid inoculation is absolutely safe, causes but trifling discomfort, and affords a considerable degree of protection against the disease. Its possibilities in the treatment of typhoid carriers, and of the disease in its active state, remain to be determined. It may well be that in it we have an agent whose widespread use may greatly diminish the endemic incidence of the disease and reduce typhoid fever to a place with diphtheria and smallpox in the category of controlled infections. Such a consummation would not only save human life and suffering, but would remove a standing disgrace to preventive medicine and to modern civilization. Under such circumstances we do not hesitate to urge upon members of the profession in the strongest manner the more extensive trial and adoption of this valuable prophylactic agency.

## THE HOSPITAL OF THE ROCKEFELLER INSTITUTE FOR MEDICAL RESEARCH.

The hospital of the Rockefeller Institute for Medical Research was thrown open for inspection by invited guests on Oct. 17, and by the public on Oct. 18, and now is ready to commence its regular work.

It is located on the grounds of the institute, at the foot of East 66th Street and the East River, and is one of the most perfectly equipped establishments of the kind in the world. Its architecture harmonizes with that of the older building, and in the space between the latter and the main hospital is the isolation pavilion, for the treatment of patients suffering from contagious diseases. Each room in the pavilion has glass walls and airtight doors, and there is no chance for the air in one room to escape into the room of another patient. The ventilation apparatus connects with the roof, and the air leaving a room is sterilized by steam on its way up through the ventilating tubes. In the main building, one whole floor is given up to the accommodation of patients who are in need of unusual quiet and who can be looked after better in separate rooms. Landscape architects are now beautifying the surrounding grounds, and these will include tennis courts for the medical staff.

This new hospital will greatly enlarge the function of the institute, which has heretofore consisted of laboratory studies of physiological and chemical problems related to disease; pathological investigations of such affections as cancer, cerebrospinal meningitis, anterior poliomyelitis, etc.; and problems related to surgery. The following statement with reference to the hospital and its work has been given out by the management: "The purpose of the hospital is not that of merely adding seventy beds to the general hospital resources of the city of New York, but rather of being a place where an intensive study can be made of a few selected diseases. It has been supposed that a hospital connected with an institute for medical research would be one in which the patients were to be experimented upon, or used in the testing of novel remedies. It should be clearly understood at the outset that this hospital would have no right, and does not expect, to take any liberties with its patients in this respect. The treatment and cure of the patient will be the prime consideration in every individual case. The advantage to science which is expected from the establishment of the hospital will be derived rather from the unique opportunity of observing and treating disease. Of course, patients admitted to the hospital of the Rockefeller Institute will have a right to expect the advantage accruing from important discoveries and improvements bearing on the treatment of disease, but the obligation to safeguard the health of the individual will always be paramount. By the terms of the foundation of the hospital no charge will ever be made for services rendered to patients by the hospital, whether for medical attendance, drugs, nursing, board or lodging. Cases will be admitted solely because they fall within a class of diseases which, at a given time, it has been decided to treat in the hospital. The best service that the hospital can render will be given to every patient without regard to his poverty or wealth. Every physician

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in the hospital is required to give his entire time to the work of the institute, to the exclusion of private practice, and even of consultation. This will insure an amount of careful medical oversight during the entire period of sickness which under ordinary circumstances would rarely be available."

It is stated that at the present time the diseases, cases of which will be admitted to the hospital, are pneumonia, anterior poliomyelitis, certain heart affections, and certain affections of disturbed metabolism. The medical staff is as follows: Director, Dr. Rufus T. Cole, formerly of the Johns Hopkins University; physician to the hospital, Dr. Christian A. Herter, at present professor of pharmacology and therapeutics in the Medical Department of Columbia University; resident physician, Dr. C. C. Robinson; internes, Drs. Draper, Swift, Marks and Peabody. All the last named have taken the ordinary course of hospital service and have devoted special attention to research work. Mr. Jerome D. Greene, well known through his recent services to Harvard University, is now the general manager of the Institute.

## THE THERAPEUTIC VALUE OF RADIUM.

The presence in this country of Dr. Louis Wickham, Clinical Director of the Radium Institute in Paris, offers an apportunity for American physicians to learn from a leading authority the value of radium in the treatment of disease, especially of those forms usually referred to the surgeon or dematologist.

At the suggestion of Drs. J. C. White, J. C. Warren, F. H. Williams and R. H. Fitz, a special meeting of the Surgical Section of the Suffolk District Medical Society will be held on the evening of Monday, Oct. 31, at which Dr. Wickham will give those present the benefit of his wide experience in the clinical use of radium. Dr. Wickham is so well known to the physicians of this country through his numerous contributions to our knowledge of the subject, and by the courtesy which he has extended to those visiting his clinic in Paris, that, apart from the general interest in the subject, a large audience may be expected.

## MEDICAL NOTES.

Conjunctivitis in Paris. — It is reported from Paris that a considerable epidemic of conjunctivitis is at present prevalent in that city, chiefly among the inhabitants of the poorer quarters. The nature and etiologic agent of the affection are, however, not stated.

Yellow Fever in Venezuela. — News from Puerto Cabello, Venezuela, reports a recent outbreak there of yellow fever. The number of cases is not stated.

Prosthetic Surgery in a Chicken. — An interesting example of the possibilities of veterinary prosthetic surgery is reported from Anderson, Ind. A chicken was recently hatched in that town with a congenital defect of the lower mandible, a sort of micrognathus, which prevented it from picking up its food. The local blacksmith took measurements of the incapacitated chicken, made a half-beak of tin, and wired it to the stub of the lower jaw. With this appliance the chicken is able to eat as well as with a normal beak, and is said to be holding its own in the struggle for existence as well as normal chickens without this unfortunate disability.

Tetanus Neonatorum in Hindustan. — At the recent Naini Tal Sanitary Conference in Hindustan, attention was called to the extensive mortality from infantile tetanus among the natives, especially at Campur. The prevalence of this disease is doubtless due to their custom of applying to the umbilical stump in the newborn a dressing made of mud, which, of course, contains tetanus bacilli in active culture. It will take centuries of education to eradicate the septic obstetric practises of some oriental peoples.

Another Gift to the Rockefeller Institute. — Mr. Rockefeller celebrated the opening of the new hospital attached to the Rockefeller Institute for Medical Research in New York with an additional gift of $3,820,000. This makes the total of Mr. Rockefeller's gifts to the Institute $8,240,000.

The occasion was further marked by the placing of the institution's property absolutely in the hands of the board of trustees, establishing it in the future as an independent foundation.

Pure Food Prosecution in England. — Prosecutions under food and drugs laws are not confined to our own country. In London recently a dairy company was fined £10, with 10 guineas' costs, for selling Gorgonzola cheese with a plaster rind composed of 13.8% of tallow and 86.2% of barytes colored with oxide of iron. This rind formed 21.7% by weight of the whole cheese, only 78.3% being genuine Gorgonzola. The court sustained the prosecution in its contention that the rind was not a necessary part of the cheese, and tended to render it not of the nature, substance and quality required by law.

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Centennial of the University of Berlin. — The University of Berlin celebrated last week with appropriate academic ceremony the one hundredth anniversary of its foundation. A number of honorary degrees were conferred, several upon Americans. Among the latter recipients selected for this distinction were Associate Justice Oliver Wendell Holmes, who received the doctorate of laws; President Arthur T. Hadley, who received the doctorate of philosophy; and Prof. Theodore William Richards, who received the doctorate in medicine. Dr. Richards is professor of chemistry at Harvard College and in 1907 served as exchange professor at the University of Berlin. The exercises on the occasion of the celebration were attended by notable representatives of the *gelehrte Welt* from every part of Germany and from many foreign countries.

Status of the Cholera Epidemic. — During the past week, according to available reports, there have been 98 new cases of Asiatic cholera in Italy, and 30 deaths from the disease. One fatal case has also been reported as occurring in London, though the mode of its entrance has not as yet been determined. In the United States no further cases have been detected, but rigid precautions are still in force, and the local health officers of every city in which immigrants from Russia or Italy settle have been requested by the Federal Immigration Bureau to keep all such settlers under observation until all possibility of their developing the infection is passed.

Mission Hospitals in the Orient. — At the centenary meeting of the American Board of Commissioners for Foreign Missions, held in Boston last week, commendatory emphasis was laid by several speakers on the work accomplished by Christian hospitals in heathen lands. There are now such hospitals and dispensaries in eight of the principal cities of Turkey, and the charitable and medical relief afforded by these institutions in times of pestilence, famine and war have done much to conciliate and educate the people. At the Marathi Mission in India nearly 50,000 patients were treated last year by five American and two native doctors, and similar work is being done in Rahmi, Ahmednagar, Bombay, Wai and Sholapur. No foreigners are so much respected in India as American physicians and nurses.

Meeting of the Advisory Public Health Board. — The meeting of the advisory board of the hygienic laboratory of the United States Public Health and Marine-Hospital Service, to which we made editorial reference last week, was held at Washington on Oct. 10. The principal topics under discussion were the prevention of cholera, the control of poliomyelitis and the treatment of pellagra. Dr. Lavender, who was sent abroad last spring to study the latter disease in Italy, presented a preliminary report, the details of which have not yet been made public. The board, which is composed of Dr. Simon Flexner, of New York; Prof. William T. Sedgwick, of Boston; Victor C. Vaughan, of Ann Arbor, Mich.; Prof. Frank Westbrook, of Minneapolis, Minn.; and Dr. William Henry Welch, of Baltimore, acts on such occasions as a national council of experts in conjunction with the officials of the Public Health Service.

## BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston.— For the week ending at noon, Oct. 18, 1910, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 33, scarlatina 15, typhoid fever 29, measles 8, smallpox 0, tuberculosis 49.

The death-rate of the reported deaths for the week ending Oct. 18, 1910, was 17.34.

Boston Mortality Statistics.—The total number of deaths reported to the Board of Health for the week ending Saturday, noon, Oct. 15, 1910, was 205, against 181 the corresponding week of last year, showing an increase of 24 deaths, and making the death-rate for the week, 15.94. Of this number 109 were males and 96 were females; 200 were white and 5 colored; 138 were born in the United States, 64 in foreign countries and 3 unknown; 51 were of American parentage, 126 of foreign parentage and 28 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 33 cases and 3 deaths; scarlatina, 9 cases and 0 deaths; typhoid fever, 30 cases and 2 deaths; measles, 4 cases and 0 deaths; tuberculosis, 42 cases and 22 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 25, whooping cough 2, heart disease 31, bronchitis 3. There were 16 deaths from violent causes. The number of children who died under one year was 50; the number under five years, 64. The number of persons who died over sixty years of age was 46. The deaths in public institutions were 83. Anterior poliomyelitis, 1 case and 1 death.

Of the above infectious diseases the following were non-residents: Consumption, 3 cases and 5

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deaths. Scarlet fever, 1 case. Typhoid fever, 1 case.

Deducting deaths of non-residents, the total is 174 and the death-rate is then 13.53.

Typhoid Fever at Hyde Park. — Since Sept. 6, 26 cases of typhoid fever, with 3 deaths, have been reported to the Board of Health at Hyde Park, Mass. No definite source of the infection has yet been determined, and investigation has shown no obvious contamination of water-supply.

Scarlet Fever in Somerville. — During the past week there has been an outbreak of scarlet fever in Somerville, Mass., which is, however, hardly extensive enough to deserve the name "epidemic." Eighteen cases of the disease have been reported, of whom 14 are in hospital and 4 quarantined at their homes.

Poliomyelitis in Rhode Island. — News from Providence states that during the past week four new cases and two deaths from poliomyelitis were reported to the Rhode Island State Board of Health, making a total of 24 deaths from the disease in that state during the current year. Quarantine against poliomyelitis has been recommended by the advisory board of the United States Public Health and Marine-Hospital Service, and has for some time been enforced throughout Massachusetts.

Northeastern Dental Association Meeting. — The sixteenth annual meeting of the Northeastern Dental Association will be held at Hotel Somerset in Boston on Oct. 20, 21 and 22. At the opening session to-day a paper was read by Dr. Charles K. Teter on "Nitrous Oxide and Oxygen." Among Boston dentists who will also present papers are Dr. Alfred P. Rogers and Dr. George H. Wright.

Purchase of Land for South Department. — An order has been passed by the Boston City Council, and approved by the mayor, authorizing the purchase of a tract of land on Southampton Street for the construction of new wards for the South Department of the Boston City Hospital. This extension is made necessary by the great overcrowding of the present wards of this department, in addition to which considerable sums were expended last year by the city for the treatment outside Boston of contagious cases that could not be accommodated at the City Hospital.

Work of the Boston Dispensary. — At the annual meeting of the corporation of the Boston Dispensary last week, the report of the superintendent presented a record of notable activity on the part of this institution. During the past year, 31,799 new patients have been received at the central office and 11,087 in the districts. A total of 102,263 visits has been made at the central office and 20,387 in the districts. At the dispensary, 81,247 prescriptions have been filled; and 2,987 patients, of whom 1,000 were new cases, have been cared for by the Social Service Department. During this year, the Dispensary has also assumed charge of the Tyler Street Day Nursery.

Deportation of Hookworm Patient. — The patient with hookworm disease whose case we noted in the Journal for Sept. 22 as under treatment at the Carney Hospital, South Boston, has been ordered by the federal health officials to be deported to the Cape Verde Islands, whence he came on Sept. 4 last. He was admitted to hospital with the disease six days after landing in this country, and must, therefore, have had it on his arrival, which renders him liable to deportation under national law.

Closure of Milk Stations. — The recent closing of several stations of the Boston Milk and Baby Hygiene Association, from lack of funds, is particularly unfortunate, since it not only stops the daily benefit done to patients, but to a considerable extent undoes the work already accomplished in building up the clinic and educating the mothers. In the absence of suitable milk and watchful supervision, the latter may be expected readily to slip back into the popular fallacies of infant feeding, with a corresponding increase of malnutrition and infant mortality. Fortunately the results are not likely to be as serious at this season of the year as in hot weather. It is earnestly to be hoped that before another summer sufficient money will be forthcoming to insure the full continuance and extension of this beneficent charity.

Milk Transportation Rate Compromise. — The conflict over the regulation of milk transportation rates in Boston, to which we referred editorially in the issue of the Journal for Oct. 6, has been temporarily settled by compromise between the contractors and the railroad companies. The rates under the new agreement have not yet been made known, but it is expected that they will not be higher than those previously in operation.

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Pending the announcement and trial of these compromise provisions, the Interstate Commerce Commission has deferred action on the complaints previously made by the dealers against the railroads. Whatever the result of the new arrangement, it is probable that the shipment rates and the market price of milk will before long again become subjects of legislative discussion.

Water Famine in Palmer. — In last week's issue of the Journal we made editorial comment on the dangers of scanty water supply, referring particularly to the unfortunate conditions then prevailing at Palmer, Mass. During the past week these conditions have not improved, and the local water company has issued an order forbidding the use of the reservoir water for other than drinking purposes. To provide some protection for the town in the event of fire, a fire-engine has been installed under temporary shelter near the Quaboag River from which it can pump water through 900 feet of hose to the center of the town. For bathing purposes water is also being pumped through 2,300 feet of hose from Burleigh brook. A scheme to provide a new supply of drinking water from artesian wells at Tennyville has been given up for the present owing to lack of sufficiently powerful pumping-engines. Unless nature soon comes to the relief of Palmer with a copious rainfall, it would seem that the town is still in a serious situation, which might be made critical by the outbreak of fire or of epidemic disease.

NEW YORK.

Typhoid and Diminished Water Supply. — In Westchester County there has of late been a considerable increase in typhoid fever, and this is attributed indirectly to the greatly diminished water supply, in consequence of the prolonged drought. On Oct. 7, Dr. Ernst Schmid, President of the Board of Trade of White Plains, issued a second warning against the use of the water from a stream called Davis Brook, to which, he declares, most of the cases in the village have been traced. This water has been shown to abound in typhoid bacilli.

Report on Ehrlich's "606" — Dr. A. L. Wolbarst, attending genito-urinary surgeon to the out-patient department of the Beth Israel Hospital and the West Side German Dispensary, has just returned from Europe with a supply of Ehrlich's "606," which was personally entrusted to him by Professor Ehrlich for testing the remedy in his public and private practise. While in Berlin he had the opportunity of observing the effects of this new treatment in some three hundred cases of syphilis, and he states that in the successful cases the promptness of the results often seemed quite marvelous, especially in instances of four or five years' standing which had resisted ordinary treatment.

A "Cholera Carrier." — A third case of cholera has developed in quarantine. This was reported on Oct. 9 by Health Officer Doty, the patient being an Italian thirty-six years old who arrived from Naples on the steamship *Moltke* one week previous. Dr. Doty states that the case shows all the features of the *Germania* case, and is undoubtedly one of the kind known as "cholera carrier." The *Moltke* left Naples on Sept. 21, and it was about seventeen days later that the man became ill with the disease.

New Medical Directory. — The new Medical Directory of the Medical Society of the State of New York, just issued, contains the names of 13,474 registered physicians in New York state, as against 13,023 in 1909; 2,558 in New Jersey, as against 2,458; and 1,384 in Connecticut, as against 1,304. In New York City there are 7,169, as against 6,889 in 1909, and 6,305 in the rest of the state, as against 6,134.

Conference of Sanitary Officers. — The 1910 Conference of Sanitary Officers of the State of New York is to be held at Buffalo on Nov. 15, 16 and 17, and the Health Department has been promised the assistance on this occasion of a number of sanitarians of national reputation. It is purposed to devote one day to the discussion of the relationship between health departments and various elements of society and another to communicable diseases, and to hold separate sessions for the consideration of certain problems affecting city and rural health officers respectively. There will also be an evening public meeting.

Lectures on Public Health. — In the course of a lecture at Columbia University on Oct. 10, on "The Development of Public Health Work," Dr. H. M. Biggs, Medical Officer of the City Health Department, stated that while many other American cities, especially the newer ones, had lately claimed a lower death-rate than New York, the statistics quoted in support of this claim were often untrustworthy. For one thing, the population of new places was being constantly increased by the advent in large numbers of new residents who were in middle life, and the death-rate in middle-aged persons was admittedly low.

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Another explanation was to be found in the fact that many deaths in smaller cities are never reported, a matter of impossibility in New York. This was the first of an extended course of public lectures on public health problems and the prevention of disease to be given at Columbia on Monday afternoons, a series somewhat similar to that inaugurated last season, under the auspices of the university, at the College of Physicians and Surgeons. Among the other lectures in the course will be the following: "Water Pollution and Water Purification," by Dr. C.- E. A. Winslow; "The Collection and Disposal of Municipal Waste," by Dr. George Y. Soper; "Communicable Diseases — Their Transmission," "Communicable Diseases — Their Prevention," by Dr. William H. Park; "Some Examples of the Control of Infectious Diseases," by Dr. Simon Flexner; "The City Milk Supply and Its Control," by Dr. Ernest Lederle; "Tuberculosis — The General Problems, The Organized Campaign against the Disease," by Dr. Livingston Farrand; "Tuberculosis as a Social Problem, Methods of Treatment," by Dr. James A. Miller.

Mortality Statistics. — The weekly reports of the Health Department show that the mortality in the city during the month of September represented an annual death-rate of 14.48, as against 14.91 in August and 14.33 in September, 1909. The corrected death-rate for the month, excluding nonresidents and infants under one week old, was 13.81. In the week ending Sept. 17, the uncorrected rate was only 13.58, the lowest recorded since the first week of November in 1908. Among the diseases in which there was a diminished fatality were the following: The weekly average of deaths from whooping-cough declined from 9.25 in August to 4.25 in September; the weekly average from diphtheria and croup, from 19.75 to 13.5 (the lowest number recorded in years); from diarrheal diseases, from 268 to 190.75; from diarrheals in children under five years of age, from 255 to 181.25; from appendicitis and typhlitis, from 12.5 to 9; from Bright's disease and acute nephritis, from 90.75 to 87.75; and from puerperal diseases, including septicemia, from 12.25 to 10.75. Among the diseases in which there was an augmented mortality were the following: The weekly average of deaths from scarlet fever increased from 2.75 to 3.75; from pulmonary tuberculosis, from 152.75 to 159; from acute bronchitis, from 11 to 14; from bronchopneumonia, from 49.75 to 67.25; from cancer, from 70.75 to 74; from apoplexy and softening of the brain, from 14.25 to 18.75; and from organic heart diseases, from 89.75 to 108.75.

The total number of births reported in the state during the month of August was 18,049, while the deaths numbered 11,998, showing a net, gain in native population of 6,051. Of this net gain, 5,157 were in New York City, where the births reported amounted to 11,207, as against 6,050 deaths. In the whole state there were 734 deaths by accident during the month, and of these, railroad fatalities were responsible for 159 and drownings for 138.

## Current Literature.

Medical Record.

Oct. 1, 1910.

1. Anders, J. M. *Street Dust as a Factor in Spreading Disease: Methods of Removal.*
2. Lanehart, L. N. *Surgery in Its Relation to Nervous Patients.*
3. Hagner, F. R. *Gonococcus Infection of the Kidney, with Reports of Cases.*
4. Aaron, C. D. *Report of a Case of Carcinoma of the Splenic Flexure of the Colon Treated with the Neoformans Vaccine.*
5. *Pelton, H. H. *The Diagnosis of Incipient Pulmonary Tuberculosis.*
6. Bandler, S. W. *The Metreurynter Incision of Dührssen in the Treatment of Placenta Previa, with Report of a Case.*
7. Snow, W. B. *Neuritis.*
8. Brouner, W. B. *Stricture of the Male Urethra.*

5. Pelton emphasizes the importance of early diagnosis in pulmonary tuberculosis, a disease which is making an appalling drain on public funds and private charity. Thousands of these patients might be supporting themselves if the disease had been diagnosed in the incipient stage. The chances for recovery are in direct ratio to the earliness of the discovery of the disease. In making an early diagnosis the writer considers the following points most important: (1) The anamnesis; (2) frequent examination of the chest; (3) careful observation for toxemic symptoms (evening rise of temperature, rapid pulse, loss of weight, anemia and debility); (4) the cutaneous tuberculin test; (5) x-ray examination of the chest; (6) as a last resort, tuberculin subcutaneously. In cases where sputum cannot be obtained, tubercle bacilli can sometimes be demonstrated in fasting gastric contents. Bacilli are rarely found in the stools unless the intestine is also infected. The inoculation of guinea pigs with sputum may establish a doubtful case. [L. D. C.]

Oct. 8, 1910.

1. Deeks, W. E. *The Carbohydrate Diathesis.*
2. Hart, T. S. *Results in the Treatment of Diabetes Mellitus.*
3. *Gwathmey, J. T. *Recent Progress in Anesthesia.*
4. Smith, O. C. *The Residual Appendix.*
5. Hollis, A. W. *Report of the Treatment of Typhoid Fever with Vaccine.*
6. Hahn, M. *Hemophilia Treated by Transfusion.*
7. Sallom, A. K. *Statistical Analysis of over Sixty-eight Thousand Cases of Typhoid Fever. Report No. II. Mortality.*

3. Gwathmey writes a valuable paper on recent progress in anesthesia. From animal experimentation he can state

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positively that the safety of all anesthetics is increased by the addition of oxygen and by warming. Warm chloroform and oxygen make a safer combination than ether and air. Heat is especially valuable in assisting rapid recovery from anesthesia, and in preventing nausea and vomiting.

Electric anesthesia is not yet sufficiently developed to be practical for clinical use. If it ever becomes so, it will be the safest anesthetic known.

The sequestration method of Dawbarn, which maintains anesthesia by cerebral anemia, deserves a more thorough trial; the only contra-indication is a weak heart.

More attention should be paid to anesthetic shock. All patients need preliminary treatment, both mental and medicinal, in order to eliminate the psychic element. Preliminary medication should consist of morphine, either alone or with hyoscine or chloretone. Small doses of morphine given sufficiently ahead of time will generally prevent stimulation of the vomiting center before, during and after full surgical narcosis, and the anesthetic can be discontinued much earlier. [L. D. C.]

New York Medical Journal.

Oct. 1, 1910.

1. Moorehead, J. J. *The Importance to Physicians of the New Employer's Liability Law.*
2. Butler, G. F. *Twilight Talks by the Doctor.*
3. *McCoy, G. W. *Bubonic Plague in Ground Squirrels.*
4. Sobel, J. *Scarlet Fever.*
5. Knott, J. *Aconite.*
6. Ulmer, D. H. B. *On the Effect of Quinine and Urea Hydrochloride upon a Case of Double Tertian Malarial Infection.*
7. Buzzell, J. J. *The Modern Brown Bread Pill.*
8. Harbridge, D. F. *Post-operative Complications in a Case of Acute Secondary Glaucoma, a Case of Mature Senile Cataract and a Case of Sudden Death while Performing Iridectomy for Acute Glaucoma.*

3. McCoy writes an interesting paper on the occurrence of bubonic plague among ground squirrels in California. In 1908, when a few cases of plague occurred in San Francisco, the possibility that squirrels as well as rats might carry the infection was suggested. During the past two years the writer and his associates have examined 90,000 squirrels pathologically; 300 of them were found to be infected. In some districts the ratio was as high as 1: 10. Since 1908 there have been 12 human cases in which evidence pointed conclusively to squirrels as a causative factor. At present, therefore, the indication is to exterminate the ground squirrel as well as the rat in infected districts. [L. D. C.]

Oct. 8, 1910.

1. Beers, N. T. *Medical Photography.*
2. Cole, L. G., and Einhorn, M. *Radiograms of the Digestive Tract by Inflation with Air.*
3. Scarlett, R. B. *A Case of Intranasal Sarcoma.*
4. Amberg, E. *An Irregularly Pearl-shaped Bone Formation in the Mastoid Process.*
5. Girdwood, J. *The Doctor's Duty in Tuberculosis.*
6. Davison, R. E. *Inversion of the Puerperal Uterus.*
7. Schumann, E. A. *Observations upon the Baldy Operation for Retroversion of the Uterus.*
8. *Savitz, S. A. *A Brief History of Epidemics among the Alaska Indians, with Special Reference to Tuberculosis.*
9. Keschner, M. *Alcohol and Its Relations to Legal Medicine.*
10. Henson, G. E. *A Plea for a More Vigorous Campaign against the Malarial Fevers.*

8. Savitz has studied the history of the Alaska Indians and finds that they have been visited with several plagues during the past forty years. In 1869, an Indian trading with white men in British Columbia contracted measles and took it back to his countrymen. All the tribes were afflicted in large numbers, both children and adults; the mortality was 33%, most of the deaths being due to a complicating pneumonia. In 1872 smallpox raged among these people with frightful mortality; most of the fatal cases died before the eruptive stage. In 1876 there was a serious epidemic of influenza. In 1888 there was a second epidemic of measles, and in spite of the enlightened work of missionaries, 20% died, many of a complicating diphtheria. Tuberculosis has probably always been with them. [L. D. C.]

The Journal of the American Medical Association.

Oct. 1, 1910.

1. Hurty, J. N. *The Bookkeeping of Humanity.*
2. McClanahan, H. M. *A Brief Report of the Nebraska Epidemic of Poliomyelitis.*
3. Woods, H. *The Rôle of Ophthalmology in Preventive Medicine.*
4. Harrower, H. R. *Metabolism and Mouth Disease.*
5. *Gosman, G. H. R. *The Present Status of Typhoid Inoculation.*
6. *Nichols, H. J., and Fordyce, J. A. *The Treatment of Syphilis with Ehrlich's "606."*
7. Sedgwick, J. P. *Creatinin and Creatin Metabolism in Children.*
8. Latham, V. A. *Systemic Conditions in Relation to Oral Symptoms and Sepsis.*
9. Duke, W. W. *The Relation of Blood Platelets to Hemorrhagic Disease.*
10. Ogilvy, C. *Operative Treatment of Club-Foot.*
11. Winslow, R. *Partial Thyroidectomy in Dementia Precox.*
12. Alexander, J., and Bullowa, J. G. M. *Influence of Colloidal Protection on Milk.*
13. Gordon, A. *Is Acute Chorea an Infectious Disease?*
14. Newett, L. *Unusually Quick Rash following Injection of Diphtheria Antitoxin.*
15. Nelker, A. *Essential Hemospermia.*

5. Gosman speaks of antityphoid inoculation very hopefully. Not only does it reduce the number of cases, but when a case does appear in a patient who has been inoculated (which is rare, however), the course of the disease is much milder. This is found true from 8,510 inoculations in the United States and German armies. A great stride has been made by the successful treatment of a typhoid carrier by Stone, and the number of cases developing in nurses and ward tenders at the Massachusetts General Hospital has been greatly lowered following Spooner's inoculations, which have resulted in the important fact that this is the first year that no typhoid has originated in the Massachusetts General Hospital. English statistics show that immunity will last three years, which will cover the time of most campaigns, also the training courses of nurses and house pupils. Severe reactions are few and the injection is believed to be harmless. Further systematized inoculation of soldiers and hospital attendants is strongly urged as a routine.

6. Nichols and Fordyce give a detailed description of the composition, dosage and uses of Ehrlich's new syphilis remedy, the so-called "606," or synthetic arsenobenzol, a drug which had for its purpose the destruction in a single dose of all the parasites, leaving the host uninjured. Clinical results seem to show that this remarkable drug can do this. Too short a time has elapsed, however, to warrant the statement that no relapses ever occur. His stated that within twenty-four to forty-eight hours of the injection of the drug, superficial lesions, such as mucous patches, condylomata and primary lesions, are free from living spirochetes. The drug is a yellowish powder which rapidly oxydizes on exposure to air, and is, therefore, put up in vacuum tubes. It dissolves in water with difficulty, making a strongly acid solution. The administration is as a neutral base or an alkaline salt, deep into the muscles, into the veins or under the skin. The dose is 0.3 to 0.6 gm., and is dissolved in 1 to 2 ccm. of sodium hydrate solution. Acetic acid is then added, drop by drop, till the base precipitates out in the form of a fine yellowish suspension. This precipitate is collected in from 1 to 2 ccm. of sterile distilled water and $\frac{1}{10}$ normal sodium hydrate added, or 1% acetic acid as needed, until the reaction becomes precisely neutral to litmus. According as the reaction is or is not accurately neutral, the injection will be followed by much or no pain. Clinically this drug has been tried at the Blackwell's Island Hospital. Results showed that whereas before the treatment the serum reactions were all positive, at the expiration of a certain time, three or four months, all the reactions became negative.

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The dose was found to be nearer 0.6 than 0.3 for beneficial results. This drug is not generally available at the present time. [E. H. R.]

Oct. 8, 1910.

1. *Holt, L. E. *Bacteriology of Acute Respiratory Infections in Children as Determined by Cultures from Bronchial Secretion.*
2. Folkes, H. M. *The Negro as a Health Problem.*
3. *Jones, W. A., and Hamilton, A. S. *Hemiplegia following Acute Infections.*
4. Tonney, F. O. *Tuberculosis in Market Milk of Chicago.*
5. McCurdy, S. L. *Pathology and Treatment of Alveolar Abscess.*
6. Lumbard, J. E. *Improved Method of General Anesthesia in Head Surgery by Means of Glass Nasal Tubes.*
7. Smith, L. L. *Report of a Case of Middle Meningeal Hemorrhage Accompanied by Actual Hemiplegia. Operation. Recovery.*
8. *Lord, F. T. *The Etiology of Actinomycosis.*
9. Craig, C. F. *Complement Fixation with an Antigenic Crystal Obtained from Luetic Liver.*
10. Holinger, J. *The Pathology and Prognosis of Internal Ear Complications Resulting from Inflammatory Middle Ear Diseases.*
11. Fletcher, J. R. *Discussion of the Symptoms and Diagnosis of Infection of the Labyrinth Resulting from Suppurative Otitis Media.*
12. Davis, G. E. *The Present Status of Vertigo Considered from a Diagnostic Standpoint.*
13. Wahrer, C. F. *Foibles in Specialism.*
14. Bamberger, A. *A Case of Colloid Carcinoma of the Skin.*
15. Ely, L. W. *The Pathology of Joint Tuberculosis: Tuberculous Sinuses.*

1. Holt, from his researches, believes that the bacillus influenzæ is the causative agent in many cases of obscure high temperature in cases of recurrent bronchopneumonia or pneumonia running an unusual course, or of high temperature persisting in cases of otitis in which the ears have been opened, or after surgical operations, especially in the winter and spring months.

3. Jones and Hamilton report an interesting series of cases of hemiplegia, mostly following diphtheria, but some in other acute affections. They state that peripheral paralyses occur in diphtheria in as high as 5 to 15% of the cases, while hemiplegias are very rare, 3 in 800 cases in the Berlin Charity Hospital. Osler found none in 120 cases. Taylor states that the causes of infantile hemiplegia in order of frequency are: Acute encephalitis, thrombosis (arterial or venous), hemorrhage and embolism. In diphtheria, antitoxin does not seem to have lessened the cases of paralysis, either of central or peripheral origin.

8. Lord has made valuable investigations into the etiology of actinomycosis. He suggests that the failure of actinomycosis to develop at other than body temperature, the lack of any convincing evidence that it is a contagious disease and the prevailing location of the affection about the jaws and neck, suggest that infection arises from within the individual and probably from the mouth. He has demonstrated the presence of organisms which have all the characteristics of actinomycosis from smears taken from the teeth and tonsils of patients without actinomycosis. This was confirmed further by guinea pig inoculation. [E. H. R.]

The Archives of Internal Medicine. Vol. 6. No. 3. September, 1910.

1. *Robertson, H. E., and Chesley, A. J. *Pathology and Bacteriology of Acute Anterior Poliomyelitis.*
2. *Hopkins, J. G. *Phagocytosis of Red Blood Cells after Transfusion.*
3. Wiggers, C. J. *The Prognostic Significance of Pulse-Pressure Changes during Hemorrhage.*
4. Oertel, H. *Multiple Non-Inflammatory Necrosis of the Liver with Jaundice in Chronic Cyanosis.*
5. Cross, G. *A Case of Trichinosis; Trichinella Found in Blood Taken from an Ordinary Ear Puncture.*
6. Gage, J. G., and Bass, C. C. *The Prevalence of Hookworm Infection in the Better Class of Southern White People.*
7. Evans, G. H., and Whitney, J. L. *A Preliminary Report on the Diagnostic Value of the Intracutaneous Tuberculin Test.*
8. *Frank, R. T. *Has Ovotherapy, as Now Practiced, an Experimental Basis?*
9. *Gay, F. P., and Lucas, W. P. *Anterior Poliomyelitis. Methods of Diagnosis from Spinal Fluid and Blood in Monkeys and in Human Beings.*

1. Robertson and Chesley, after reviewing the literature relating to the pathology of acute anterior poliomyelitis, give their own findings in 6 cases. The pathological process, they found, extended from the perivascular lymph-channels of the anterior portions of the cord into the surrounding tissue spaces of the gray matter and into the lymph-channels of the white matter and pia. The exudate at first consisted of small numbers of polymorphonuclear leucocytes, but soon these were replaced by endothelial cells and lymphocytes. The tissues became edematous and in places infiltrated with lymphocytes. The blood vessels were congested and showed fatty degeneration of their walls. The hemorrhage following rupture of these degenerated areas seemed to be the agent most responsible for the destruction of tissue. Stains for micro-organisms were negative, and inoculation of animals merely confirmed the opinion that Geirsvold's diplococcus is not a causative factor in the disease.

2. Hopkins, examining the blood of a patient with pernicious anemia after transfusion, found an active phagocytosis of red cells by polynuclear leucocytes. He discusses the reason for this, but does not reach a definite conclusion.

8. Frank attempted, by use of the corpus luteum of ten sheep, to bring about changes in the uterus of castrated rabbits. His results were negative, leading him to believe that the use of ovarian extract of a heterologous species, as it is now prepared, does not replace the secretion of the removed gland.

9. Gay and Lucas found that the acute stage of anterior poliomyelitis, both in human beings and in monkeys, is characterized by the occurrence of a distinct leucopenia, with relative increase of eosinophiles and lymphocytes.

In spinal fluid from monkeys, during the incubation and prodromal stages, the number of cells is increased, the increase being first of the mononuclear type, later of the polymorphonuclear. A fibrin clot appears during prodromal and early stages, but disappears later.

There was never any evidence of the presence of antibodies in the serum or spinal fluid of monkeys with the disease, nor in the spinal fluid of human beings with poliomyelitis. [G. G. S.]

The Lancet.

Sept. 17, 1910.

1. *Wright, A. E. *Vaccine Therapy; Its Administration, Value and Limitations.*
2. Sheen, W., Scholberg, H. A., and Wallis, R. L. M. *A Case of Chondro-Carcinoma of the Testis.*
3. Whillis, S. S., and Pybus, F. C. *The Enucleation of Tonsils with the Guillotine.*
4. Lediard, H. A. *Verminous Appendicitis.*
5. Wilson, W. J. *A Note on the Toxicology of Carbon Monoxide.*
6. Horne, W. E. *The Ventilation of Ships, Particularly Merchant Ships.*
7. Harris, D. F. *The Pioneer in the Hygiene of Ventilation.*
8. Lister, T. D., and Wilkins, W. D. *The Bevenden Sanatorium and Industrial Insurance for the Treatment of Phthisis.*

1. In an address before the Royal Society of Medicine on "Vaccine Therapy," Wright first discusses the rationale of this procedure; he describes the recent history of medicine as it has affected bacteriology. He deplores the fact that the average clinician does not and cannot do much of his own bacteriologic work, but merely delegates it to the laboratory man. He discusses the limitations of vaccine therapy first as stated by the clinician and again as contended for by the bacteriologic worker. He mentions various conditions, such as x-ray dermatitis, pruritus, hay fever, gastric disturbances, which the clinician

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claims are quite beyond the reach of vaccine therapy, but which have shown marked improvement by this method.

He goes on to discuss the limitations as contended for by the bacteriologist, the relation of the opsonic index to inoculation, whether this index can be accurately measured or not, and whether or not it can be dispensed with. The general subject of the value of vaccine therapy and the mode of administration of the vaccine he speaks of briefly. [J. B. H.]

BRITISH MEDICAL JOURNAL.

SEPT. 17, 1910.

1. *McGavin, L. *Remarks on Eighteen Cases of Spinal Analgesia by the Stovaine-Strychnine Method of Jonnesco, including Six Cases of High Dorsal Puncture.*
2. Stock, S. V. *Remarks on Anesthetizing Patients for Operations on the Throat, Nose and Accessory Sinuses.*
3. Keay, J. H. *State Insurance and the Poor Law Commission.*

THE BRITISH MEDICAL ASSOCIATION.

*Section on Anesthetics.*

4. Hewitt, F. W. *Introductory Remarks.*
5. Buxton, D. W., *et al. Discussion on the Dosimetric Method of Administering Chloroform.*
6. *Rowell, G., *et al. Discussion on the Prevention and Treatment of Shock.*
7. *Blumfeld, J., *et al. Discussion on the Present Position and Limitations of Spinal Anesthesia.*
8. Gardner, B., *et al. Discussion on the Open System of Ether Administration.*

*Section on Odontology.*

9. Goadby, K. *The Buccal Secretions and Dental Caries.*
10. Badcock, J. H. *The Need for Correction of Malpositions of Teeth.*
11. Austen, H. *The Effects of Drugs in the Causation of Dental Caries.*
12. Mummery, J. H. *Susceptibility and Immunity to Dental Caries.*
13. *Turner, J. G. *The Value of Teeth in the Human Economy.*
14. Baldwin, H. *Crown and Bridge Work.*

1. McGavin gives the details of 18 cases operated on under Jonnesco's combination of stovaine and strychnine injections in the spinal canal. His results are, on the whole, disappointing: 4 successful cases show that high puncture is a possibility, but do not suggest that this method will ever take the place of general anesthesia. Other cases of high puncture show its great dangers.

6. In discussing the prevention of shock, Rowell considers ether, given by the open method, as one of the biggest factors; the next best means in his opinion is the injection of salt solution under the skin. Extract of the infundibular portion of the pituitary gland (20% solution) he has found of great value in raising blood pressure, its effect lasting twelve to twenty-four hours or longer.

Crile is of the opinion that, in abdominal operations especially, handling of the intestines is a large factor; careful anesthetization and conservation of blood will help to prevent it. Fear itself he believes is a considerable factor in producing shock. He describes what he believes to be the proper method of preparing a patient mentally for an operation and of giving ether.

7. Blumfeld, McCardie, Ryall and others, discussing spinal anesthesia, seem to agree that this method is retrogressing in favor and that, though it will always be of value in selected cases, as our methods of giving an anesthetic by inhalation improve, spinal anesthesia, on account of its numerous dangers, will be less and less used.

13. In discussing the value of teeth in the human economy, Turner goes so far as to say that teeth are largely for beauty, and that as far as digesting and assimilating food is concerned, they can quite well be dispensed with. Mummery, Cryer and others were unwilling to take this radical view, but believed that carious teeth should be removed and that absence of teeth was better than carious teeth. [J. B. H.]

EDINBURGH MEDICAL JOURNAL.

SEPTEMBER, 1910.

1. *Hall, A. J., and Beattie, J. M. *An Unusual Case of Chronic Interstitial Pneumonia. (Diffuse Bilateral Pulmonary Fibrosis following [?] Influenza.)*
2. Fordyce, A. D. *The Care of the Infant and Young Child (to Five Years) in Edinburgh.*
3. *Dick, R. J. *Acute Pancreatitis Considered in Relation to Three Cases Occurring in General Practice.*

1. Hall and Beattie describe in detail a case of what they call chronic interstitial pneumonia. The case is a remarkable one in many ways. During the entire course of the disease, nearly four months, in spite of constantly increasing lung involvement, the pulse never reached 100; the temperature ran a practically normal course and there were no signs of right-sided cardiac dilatation; the patient slept better lying flat than sitting up. There are some excellent plates.

3. Dick gives the details of 4 cases of acute pancreatitis, presents a general summary of the subject, with remarks on diagnosis prognosis, and treatment. [J. B. H.]

DEUTSCHE MEDIZINISCHE WOCHENSCHRIFT. No. 37.

SEPT. 15, 1910.

1. Paschkis, H. *Concerning Cosmetics.*
2. *Wechselmann. *The Re-injection of Dioxy-diamido-arsenobenzol.*
3. v. Grósz, E. *Arsenobenzol in Syphilitic Eye Disease.*
4. Bergrath, R. *The Apparent Value of Atoxyl Acid Quicksilver in the Treatment of Human Syphilis.*
5. Bruns, O., and Gruner, J. *Effect of the Depressors on the Heart's Work and Elasticity of the Aorta.*
6. Nonne, M. *Differential Diagnosis between Multiple Sclerosis and Spinal Cord Compression.*
7. Mendel, F. *Diagnosis and Treatment of Duodenal Ulcer.*
8. Joachimsthal. *Congenital Vertebral Anomaly as Cause of Curvature of the Spine.*
9. Bircher, E. *On the Question of the Etiology of Goiter.*
10. Pernice. *Foreign Bodies in the Esophagus.*
11. *Gerber. *Concerning Leprosy.*
12. Munz. *The Wassermann Reaction in the Office.*
13. Wertheimer-Raffalovich, R. *Experimental Investigation on the Effect of Pantopon.*

2. There has been considerable hesitancy on the part of the profession to use Ehrlich's new preparation for syphilis more than once in the same case. This is due to the fear of hypersensitiveness in the organism after the first injection. Wechselmann, however, has used second injections in several cases where the first did not clear up the symptoms and found that the second injection usually cleared up the remaining symptoms. He finds such an injection harmless at the eighth day, but considers that three to four weeks is the better time to give it, as it seems to have more effect.

11. Gerber has been investigating leprosy with a view to finding out the lesions in the respiratory tract and the dangers from its secretions. He does not find leprosy bacilli in the upper air passages of healthy people attendant upon those with this disease, nor in patients who have no lesions in the upper air passages. Lesions in the nose and throat, however, are very common, and when they occur the bacilli are present in the excretions in great numbers and frequently to the exclusion of other bacteria. [C. F., Jr.]

BERLINER KLINISCHE WOCHENSCHRIFT. No. 38.

SEPT. 19, 1910.

1. Ewald, J. R. *The Method of Measuring the Blood Pressure in Man.*
2. Gennerich. *The Treatment of Syphilis with Ehrlich's "606."*
3. *Thomsen, O. *The Importance of a Positive Wassermann Reaction of the Human Milk in the Selection of a Wet Nurse.*
4. Salkowski, E. *The Value of Urinary Findings in the Diagnosis of Carcinoma. Part II.*
5. Ungar, E. *Insufflation Narcosis (Meltzer's) in Man.*
6. Hirsch, K. *Concerning the Subcutaneous Rupture of the Extensor Tendon of the Terminal Phalanx of the Finger.*

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7. Drehmann, G. *The Question of Congenital Coxa Vara.*
8. Cohn, M. *Lingua Villosa Nigra in Infancy.*

3. The author states that both the milk and the serum of wet nurses should be tested by the Wassermann method. The milk should be examined either before the birth of the child or the first day or two after to give the most certain and accurate results. While many non-syphilitic cases show this reaction, the number is reduced to a minimum when only 0.1 cm. of milk is used for the test. [J. L. H.]

Bulletino delle Scienze Mediche.

January, 1910.

1. Ghillini, C. *Lesions of the Epiphyseal Cartilage.*
2. *Costantini, G. *Primary Sarcomata of the Liver.*

2. Costantini presents a clinical and pathologic report of two cases of primary sarcoma of the liver, and collects from the literature a series of 111 similar cases previously reported, including one from this Journal [March 9, 1871, vol. vii, p. 157]. Of these, however, he rejects 60 as proving on examination to have been probably instances of hepatic metastasis, and 9 not accessible in the original for verification. Of the remaining cases which he considers authentic, more than 25% occurred in the first decade of life, and the next largest number in the third decade. Nearly 80% of the cases were males. Pathologically, the author believes that such tumors may arise from perivasal, cirrhotic or pericystic connective tissue. [R. M. G.]

February, 1910.

1. Conti, A., and Rossi, F. *A Case of Lymphadenoid Pseudoleukemia with Hematologic Findings of Aplastic Anemia.*
2. Martinelli, A. *Craniotomy for Gunshot Wound.*
3. Ravà, G. *The Passage of Typhoid Agglutinins from the Mother through the Placenta to the Fetus.*

Il Policlinico.

June, 1910.

Surgical Section.

1. Stefano, P.-A. *Congenital Cystic Lymphangioma of the Neck.* (Conclusion.)
2. *Sabella, P. *Early Intervention in Tuberculous Osteitis of the Vertebral Column.*
3. Gussio, S. *A New Surgical Procedure for Salivary Fistula.* (To be continued.)
4. Zapelloni, L. C. *The Anatomic and Physiologic Relations between Rats in Parabiosis.*

2. Sabella reports a case of early lumbar Pott's disease treated by laminectomy under stovaine spinal anesthesia with removal of the left transverse process of the fifth lumbar vertebra, the only portion of bone appearing to be the seat of definite tuberculous process. The dura was exposed and found to show incipient tuberculous pachymeningitis, but was not opened. The patient was entirely relieved of pain within a few days, made a rapid convalescence, and seven months after operation is reported as being without recurrence of symptoms, able to walk and with perfect functional restoration of the sphincters. The author believes that such surgical intervention is indicated in a limited number of discreetly selected early cases as offering the hope of shortening convalescence by permanently eradicating the disease process instead of waiting for it to become arrested by spontaneous healing. [It should be added that the case in question was particularly favorable from the limitation and accessibility of the tuberculous process.] [R. M. G.]

## Obituary.

### HENRY HAMMOND GALLISON, M.D.

Henry Hammond Gallison, M.D., M.M.S.S., who died of cerebral hemorrhage last week at his home in Cambridge, Mass., was born in Boston on May 20, 1850. Though early interested in painting, he entered the Harvard Medical School, from which he graduated in 1872. He then went abroad to pursue his study of art, and remained there for some years, chiefly in Paris. During this time he became an artist of considerable distinction, and his paintings gained admission to the *salons* of Paris, Turin and London. After his return to this country, he spent his summers at Annisquam, where he owned a pleasant country house and studio, and his paintings were familiar at exhibitions in Boston and in other cities of the United States. His greatest work was perhaps in the decoration of the Ray Memorial at Franklin, Mass. Since 1908 he had been partly paralyzed from a slight premonitory hemorrhage, but had borne his disability with characteristic serenity and fortitude.

Many who knew Dr. Gallison did not know that he was a physician; but those who knew him well felt that his medical affiliation added a value to his temperament that it could not otherwise have possessed. His life is evidence that artistic tastes and talent are not necessarily killed by medical study, and his memory is one which our profession may be glad to share with that to which he was chiefly dedicated.

## Miscellany.

### MASSACHUSETTS MEDICAL SOCIETY.

Proceedings of the Council, Oct. 5, 1910.

Walter L. Burrage, *Secretary.*

A stated meeting of the Council of The Massachusetts Medical Society was held in John Ware Hall, in the Boston Medical Library, Oct. 5, 1910, at 12 o'clock, noon, the President, Dr. George B. Shattuck, in the chair, and seventy-seven Councillors present.

The record of the last meeting was read and accepted.

The secretary stated that, in accordance with custom, he had taken the oath of office for the current year.

The following were appointed delegates to the meetings of state societies:

Vermont State Medical Society: O. J. Brown, North Adams; N. P. Wood, Northfield.

Medical Society of the State of New York: D. E. Keefe, Springfield; E. P. Joslin, Boston.

Dr. Goss, for the Committee on Membership and Finance, recommended that the resignations of thirteen members be accepted; that two be placed on the retired list; that fifty-five be deprived of the privileges of fellowship for non-payment of dues.

Voted, That the report be accepted and its recommendations adopted.

Dr. C. H. Cook presented a report, as a delegate to the meeting of the National Legislative Council of the American Medical Association, held in Chicago, Feb. 28 and March 1 and 2, 1910, in which he summarized the four important papers read to the Council and their discussion. He stated that Dr. Frederick R. Green, secretary of the Bureau of Medical Legislation, has secured

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copies of all public health laws of the various states, with a view to the publication of a handbook on medical legislation. Also that a report on optometry and one on medical expert testimony, both written by Dr. George W. Gay, had received the unanimous approval of the Council, and the publication of the former in pamphlet form had been recommended. Dr. Cook urged the need of an awakening of the medical profession to a much fuller and clearer realization of the responsibilities of the medical man as a citizen, not only of a state, but of the nation, and asked the co-operation of the members of The Massachusetts Medical Society with the delegates to the National Legislative Council.

Voted, To accept the report and place it on file.

The committee appointed to consider the petitions of Drs. Maurice Gerstein, of Roxbury, and William I. Wiggin, of Lowell, to be restored to the privileges of membership, reported favorably, and the reports were accepted.

Dr. Walter P. Bowers, of Clinton, was appointed a member of the Committee on State and National Legislation, to succeed Dr. G. W. Gay, resigned.

Dr. E. W. Taylor made a motion that the President of the Society appoint a chairman and a secretary for the surgical section and for the medical section for the current year. The motion was discussed by Drs. Goss, Withington and Hugh Cabot, and it was so voted.

Also, it was

Voted, That the question of the method of appointing the officers of the sections of the Society at the annual meetings in the future be referred to a committee of three, appointed by the President, to report to the next stated meeting of the Council.

The President appointed Drs. E. W. Taylor, Lund and Cotton as this committee.

A petition from Dr. Charles Henry Crawford, of Lawrence, to be restored to the privileges of membership, was read by the secretary, and the following committee was appointed to consider the petition: Drs. G. S. Allen, R. M. Birmingham and H. W. Manahan.

A similar petition from Dr. Flora Frost Moody, of Springfield, was referred to the following committee: Dr. H. W. Van Allen, Dr. Sarah M. Wilbur and Dr. D. E. Keefe.

On motion of Dr. O. F. Rogers it was

Voted, That the Committee on Medical Diplomas be instructed to revise the list of medical colleges recognized for the purpose set forth in By-Law I and report to the next stated meeting of the Council.

Dr. G. W. Gay spoke on the partisan character of the testimony of some of the medical experts in the courts, and made a motion that the secretary call the attention of the members to this matter, requesting the Fellows of the Society to notify the Committee on Ethics and Discipline of any departure from ethical standards of which they may become cognizant, and it was so voted.

Dr. H. D. Arnold presented a report as a delegate to the House of Delegates of the American Medical Association, and pointed out the great importance of the work of the House of Delegates, and urged the full attendance of all the delegates at the annual meeting of the American Medical Association.

Voted, To accept the report and place it on file.

Dr. Hugh Cabot made a motion that the next annual meeting of the Society be held in Worcester. After an animated discussion by Drs. Cotton, G. E. Francis, H. Gage, L. F. Woodward and others, and amendment by Dr. Crowell, it was

Voted, That the matter be referred to the Committee of Arrangements, to report at the next meeting of the Council.

## Correspondence.

### TEWKESBURY; GLOUCESTER; CHEPSTOW; MONMOUTH; RAGLAN; ROSS; HEREFORD; WORCESTER; SHREWSBURY; CHESTER; LIVERPOOL UNIVERSITY.

*[From Our Foreign Correspondent.]*

LIVERPOOL, Sept. 19, 1910.

*Mr. Editor:* The country on the borderland between England and Wales seems to have been particularly associated with episodes in the civil wars of British history. The reason for this is hardly obvious unless it be that the fastnesses of the Welsh mountains have always afforded good refuge for defeated insurrectionists, for non-conforming dissenters or for deposed sovereigns, and a point of vantage for pretenders, revolutionists and intriguers of every description. In any event, many of the important battles of the Revolution (an Englishman knows only that of 1688), and of the Wars of the Roses, were fought in these parts, and the castles of the region suffered recurrent sieges by Royalists and Parliamentarians until all of them were ruined and many of them swept out of existence in the process. If Henry VIII must be blamed for the pillaging of all the abbeys, priories and shrines in England, Cromwell and his Roundheads have as much to answer for in their destruction of ancient fortresses and in the vandalism with which they visited cathedrals and churches throughout the land.

The first of these names connected with the English civil wars is Tewkesbury, a town of very different character and connotation from its American namesake, situated not far above Gloucester on the river Severn. One can go to it by boat, and the sail is very pleasant, even though one fail, as we did, to see the nymph Sabrina, who must have been driven under cover by the rain of the preceding night. One lands at a picturesque ford called the Lower Lode, and walks thence to the town across the "bloody meadow of Tewksbury." Here in 1471 was fought the decisive battle in which Edward IV defeated the Lancastrian forces and established the house of York on the English throne. In the brooding quiet of the spacious old abbey across the fields is buried Edward, Prince of Wales, killed in this battle, and also the Duke of Clarence, brother to Edward IV, who later met the ignominious though even more celebrated death of being "drowned in a butt of malmsey," a fate and mode of demise which one would have thought best suited to Sir John Falstaff. Sir John apparently knew Tewkesbury, too, for he averred of Poins's wit that it was "as thick as Tewkesbury mustard." Unhappily he died before the days of the battle, when Prince Hal as king "ran bad humours on the knight"; had he lived to engage in that memorable fight, the issue of the conflict might have been different. We could not discover, in the pleasant little tea-garden where we lunched, that Tewkesbury mustard was thicker than that of any other locality. Nor would one dream, in walking over them, that the smooth, green meadows

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which slope gently from the town and abbey to "Severn's reedy marge" were ever wet with the blood of those whom "false, fleeting, perjur'd Clarence slew on the field at Tewkesbury."

Another name intimately associated with English history is that of Gloucester, now a busy but agreeable port at the mouth of the Severn. There was no battle here, but in 1643 the town held out successfully against the Royalists. This exhibition of "malignity" was not forgotten by the Stuart adherents, and after the Restoration, the fortifications of Gloucester were utterly destroyed. There is, therefore, little of interest now in the city but its splendid cathedral. Here is buried Edward II, the first Prince of Wales, son of Edward Longshanks, the great castle-builder. Here, too, is a monument to Edward Jenner, the discoverer of vaccination, who was born in the neighboring town of Berkeley. It is a gratification to professional pride, as well as to better sentiments, to find him thus in the company of bishops and kings.

Not far from Gloucester, on the marches of South Wales, is Chepstow, whose extensive castle once guarded the mouth of the Wye and the old Roman road that still serves as a highway of travel across the river into the country beyond. This castle was held for the king in the days of Cromwell, and later served for twenty years as a prison for the regicide Martin. During those years of solitude he composed his epitaph, which may now be read over his grave in the Chepstow church. With rude but impressive nobility, these lines express his justification for his action and, like his dungeon in the ivy-grown, rambling old ruin, "appeal from tyranny to God."

At Monmouth, a short distance up the winding Wye, one comes again to associations of an earlier date. Here in 1388 was born Prince Hal, Falstaff's merry royal comrade, the hero of our finest historical drama, who later, as Henry V, conquered France and set a French princess beside him on the throne of England. The room where he was born is still shown among the scanty fragments of Monmouth Castle, and his statue, much worn and obliterated by time and weather, occupies a prominent place on the front of the town hall. Another character indelibly associated with Monmouth is that of Geoffrey, the imaginative chronicler of the twelfth century, whose romancing records, though so full of fable, constitute our most valuable information of what the history of his time ought to have been. The river Monnow, which here flows into the Wye and gives the town its name, is spanned by a bridge that resembles those at Bruges and looks as if it had been transported out of medieval Europe. Gray called Monmouth "the delight of the eye and the very seat of pleasure," and indeed it is to-day perhaps the most picturesque of English border-towns and a center for many fascinating excursions. One of the most charming of these is to Raglan, on the whole the most perfect and beautiful of ruined English castles. Like Chepstow, it was a seat of the Earls of Worcester, later Dukes of Beaufort, and, like Chepstow, was held by them for Charles I. In fact, Raglan was the last Royalist stronghold to be captured by the Parliamentary troops, who wreaked their vengeance by undermining and blowing up its beautiful moated Cæsar tower, which as a result now resembles the *gesprengte Turm* at Heidelberg. Partly perhaps in remembrance of its loyalty, partly no doubt on account of its charm and beauty of environment, it was visited after the Restoration by Charles II, whose apartments, fronting on the lovely Fountain Court, constitute the finest part of the ruin. If one could visit but two castles in England, Raglan should surely be one of them.

A little further up the Wye from Monmouth is Ross, chiefly familiar to us from Pope's verses to John Kyrle, the "Man of Ross," who became an eminent philanthropist on five hundred pounds a year. Judging by professional incomes of the present day, this should not have been so difficult a task, especially since money in those times, like George Washington's dollar, "went farther than it does nowadays." Whatever the benefit of Kyrle's philanthropy may have been to his contemporaries, he is chiefly blessed by the present generation for having planted two centuries ago the elm trees whose vigorous maturity now shades the wide churchyard of Ross. Among many quaint memorials in this quiet "God's acre" is one in Latin on the tomb of Richard Panter, who departed this life in 1733, which in spite of its uncanonical and inaccurate meter and rhyme, seems to have a touch of satirical dignity and distinction that makes it almost classic:

"Animula vagula blandula,
Hospes comesque corporis,
Quae nunc abibis in loca
Pallidula rigida nudula,
Nec ut soles dabis jocos."

It is to be hoped that these lines were intended not to cast aspersions on the deceased Panter for unseemly habitual merriment, but merely as a mournful comment on his customary cheerful Christian temper. Not far from this monument is another, a simple cross erected in 1637 to mark the burial in a common grave of 315 victims of the plague, and bearing in addition the pathetically fervent inscription, "Libera nos, Domine!" It is hard for us to realize now the poignant terror of these ancient epidemic scourges. One of the interesting preventive measures taken in the seventeenth and eighteenth centuries against the "pestilence that walketh in darkness" was the custom of whitewashing the interiors of churches throughout. As a procedure of antiseptic cleanliness this may have had some slight efficacy, but incidentally it rendered the much more valuable service of preserving to posterity a wealth of carving and frescoes which might hardly have escaped the destructive energies of the Georgian era but for the successive layers of obscuring whitewash, the removal of which has afforded occupation for the zeal of a more artistic modern generation of restorers. The church at Ross affords admirable example of beauties thus long concealed and now once more brought to light. Of the town itself there is little to be said except that it is old and somewhat shabby and evidently having a rather hard time trying to live up to its reputation and environment. Its situation is almost ideal — on the concave bank of one of the numerous bends or horseshoes from which the "devious Vaga" derives its name. On the opposite, convex bank or tongue, which broadens out into a richly green, low-lying, fertile meadow, stand the ruins of Wilton Castle, insignificant in itself, but interesting to us as having once belonged to Thomas Guy, the founder of Guy's Hospital in London, to which institution he bequeathed the property. The castle has now passed into other hands, and its walls, overgrown with reddening woodbine, form the chief attraction of a handsome private estate. Just beyond the castle, the Wye is crossed by Wilton Bridge, on which is a rather unusual four-way vertical sundial, with the admonishing motto:

"Esteem thy precious time
Which pass so swift away,
Prepare then for Eternitie,
And do not make delay."

Doubtless in a less critical age this laudable injunction lost none of its force from the grammatical license of its second or the anticlimax of its fourth line.

Still further up the Wye is Hereford, a very pleasant and prosperous city, and chief town of the county of the same name, "which for wheat, wool, and water yieldeth to no shire in England." It also manufactures much cider and a seductive drink called perry, which we did not sample. There is a fine cathedral at Hereford, and several interesting old churches, and in the outskirts of the town a hospital or almshouse for old soldiers and other pensioners, founded in 1614 on the site of a former priory of Black Friars. In the garden are still some ruins of this priory, among them a well-preserved preaching-cross, from which the monks used to hold open-air evangelistic services, somewhat in the fashion of the Salvation Army of to-day. In one of the suburbs on the opposite side of the town is the so-called White Cross, erected in 1349 to commemorate the staying of the Black Death of that year, another of the medieval pestilences which seem to have swept this region with particular severity. Of the later civil wars Hereford, though always loyal to the Crown, seems to retain scarcely any trace. It is associated with the Stuarts in another way, however, as the birthplace of Nell Gwynne, the famous beauty and actress, and favorite of Charles II. In an obscure lane, and on the very wall of the bishop's garden, too, is a brass tablet marking the

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site of the cottage where she was born, and recording her as the "founder of Chelsea Hospital and mother of first Duke of St. Albans." This somewhat tactless addition cannot help reminding one of the story how one day, when Charles had refused her request to ennoble their child, she promptly suspended the infant by the heels over the balustrade of the balcony on which they were sitting, and remarked, "Over he goes if you don't provide for him." "No," said Charles, "don't hurt the Duke of St. Albans." And so the royal peerage was established. Perhaps this episode was quite in accord with the character of the monarch "who never said a foolish thing and never did a wise one." At any rate, one cannot help thinking more leniently of him for his dying injunction to "take care of poor Nell." She is buried at St. Martin's-in-the-Fields, in London, among many with better reputations and less virtue than herself.

At Hereford we left the valley of the Wye and struck across country to Worcester. This journey took us through Malvern, famous as a health-resort on account of its mineral springs, but more interesting as the site of the monastery where William Langland wrote his "Vision of Piers Plowman." Unfortunately it was a dismal, rainy day when we traversed the scene, very different from the "May mornynge in Malverne hilles" on which the tale begins. Beyond the hills one comes again to the Severn valley and to Worcester, chiefly famous for the manufacture of the somewhat miscellaneous staples: porcelain, gloves and Worcestershire sauce. There is an architecturally interesting cathedral here, in which, by the way, we noted the epitaph of one Richard Solly, "who was seized with an inflammation of the intestines which in five days terminated his life," evidently a case of fulminating perforative appendicitis with general peritonitis. Worcester also has its association with the Stuarts, to whom it was always loyal. There is still standing in excellent preservation a fine old Elizabethan mansion, called the Commandery, from its earlier association as a hospice or infirmary of the Knights Templar, in which Charles I stayed on a visit to the town. This same house Charles II later made his headquarters for a time in 1651; here he spent the night before the battle of Worcester; and from an upper window witnessed the defeat of his troops in that memorable engagement. From that same window one can still overlook the battlefield, and one is shown the very trap-door through which the young monarch made his precipitate escape on the approach of Cromwell. There is enough old oak carving and furniture in this house to drive an antiquarian into a frenzy of admiration.

The journey from Worcester to Shrewsbury takes one back again to Plantagenet times, for here in 1403 Henry Bolingbroke, father of Prince Harry of Monmouth, won his great victory over the Earl of Northumberland. It was this battle in which Harry Hotspur was killed and in which Falstaff fought his "long hour by Shrewsbury clock." The abbey church looks much the same as it must have on that occasion, though its clock is modern, and probably a better timepiece. The town itself, whose name is happily mitigated from that of Scrobbesbyrig, in which it used to rejoice in Saxon times, contains a number of old houses, in one of which Henry Tudor, Earl of Richmond, is said to have passed the night before the battle of Bosworth, which, in 1485, terminated the Wars of the Roses and made him Henry VII of England. There is also in Shrewsbury the ancient and celebrated grammar school which in different ages has harbored two such diverse geniuses as Sir Philip Sidney and Charles Darwin.

Last and in some respects most interesting of these border-towns is Chester, which ever since Roman days has been an outpost at the Welsh frontier on the north, as Chepstow is at the south. As capital of Cheshire one associates it chiefly with cats and cheese; the latter is delectable, but the former, though numerous and amiable, seem to have lost their traditional grin. Perhaps the most distinctive characteristics of Chester, which give so many Americans their first impression of England, are its old frame houses, with their arcades and projecting upper stories, and its town-walls, the only ones in the country that remain complete, though perhaps not so interesting as those of York or of Conway. One can make the entire circuit of the city walking on top of them, and see much of interest in the journey. From the Phœnix Tower, at one angle of the walls, Charles I watched the defeat of his army at Rowton Moor, on Sept. 24, 1645, and the tower now contains a museum of relics associated with him and with the battle. The town itself held out for the king for another year, but finally surrendered to the Parliamentary besiegers. Chester had a former reputation for endurance in a losing cause, for at the time of the Conquest it was the last English city to yield to William the Norman. A little further along the walls, near the river Dee, is the Water Tower, once washed by the tide and used as a mooring-place for ships, now left high and dry by the deposit of silt and the damming of the river higher up. Near this Water Tower have been discovered a number of stumps of columns from some Roman structure on this site, which resemble gigantic mushrooms as one looks down on them from above. Still further on, by the Bridgegate, one obtains splendid views of town and river, and can go down thence to the ruins of St. John's Priory, whose crumbling red sandstone, sunk deep in ivy, makes a picture for the eye and the imagination as well. Chester Cathedral, too, is a study for the artist as well as a first lesson to the beginner in ecclesiastical architecture. Among its many monuments to soldiers, one wonders which bears the name remembered by the

"Widow in sleepy Chester
Who mourns for her only son";

but Subadar Prag Tewarri is not there to tell. Several Cheshire regiments were sent to America in the "good old colony days," and the names of Louisburg and Quebec are conspicuous on their records and standards. Some of these tattered old flags were carried at Bunker Hill, but the name of that battle is not mentioned. Among so many warriors, it is pleasant to find the peaceful grave of Ralph Higden, the monk who is supposed to have written "Everyman." It is to be hoped that the "Dethe" which summoned him proved less terrible than the grinning skeleton of the old miracle.

From Chester to Liverpool is like a step from the Middle Ages back to the familiar atmosphere of our own day and generation. The busy streets, the smoke-grimed buildings, the sharp contrasts of wealth and poverty, all bear evidence of the evils of our civilization as well as of the good that has grown out of them. As a city, modern Liverpool is dominated by the memory of Gladstone, whose statue before St. George's Hall, like that in the Strand in London, recalls vividly the bristling, indomitable figure that so long stood at the head of the greatest nation in Europe. If popular government has done nothing else, it has at least developed great democratic leaders from the days of Oliver Cromwell to our own.

The return to Liverpool marks the end of our happy and profitable holiday, and recalls professional duties and interests. We sail to-morrow, and shall soon "leave old England on our lee." In our brief time at Liverpool we have been able to make only a hurried inspection of some of the medical institutions in the city, chiefly those connected with Liverpool University, whose buildings form a huge group of structures, not so extensive as the immense Imperial Institute at London, but reminding one of it, nevertheless. There is a large general hospital, a dental hospital, a lying-in hospital, a skin hospital, a school of hygiene and splendid laboratories, among them notably those of the School of Tropical Medicine. It is impressive to visit such an institution, and consider the battle it is fighting for the sordid dwellers in the slums which surround it and for all mankind as well. The spirit of that conflict speaks eloquently in the tablet of dedication on one of the buildings:

"To the Glory of God, in the knowledge of Whom are the steps of human progress, and to the memory of William and Catharine Johnston, now beyond the shadows of time in life eternal, one of their sons erected these laboratories for the search after the mystery of life in health and sickness, and for the alleviation and prevention of suffering."

Such words are a noble reminder of the duties of a profession whose inspiration is the same wherever there is human welfare to be served. One feels the readier to return and labor humbly at home for having met and known some of those who are forwarding the same great cause beyond the seas.

MEDICUS PEREGRINUS.

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## RECORD OF MORTALITY

For the Week ending Saturday, Oct. 8, 1910.

| Cities. | Reported deaths in each. | Deaths under five years. | Cities. | Reported deaths in each. | Deaths under five years. |
|---|---|---|---|---|---|
| New York | — | — | Waltham | 5 | 1 |
| Chicago | 563 | 173 | Pittsfield | 14 | 3 |
| Philadelphia | — | — | Brookline | 4 | — |
| St. Louis | — | — | Gloucester | 7 | 3 |
| Baltimore | — | — | North Adams | 14 | 4 |
| Cleveland | — | — | Northampton | 8 | 1 |
| Buffalo | — | — | Chicopee | 6 | 1 |
| Pittsburg | — | — | Medford | 10 | 2 |
| Cincinnati | — | — | Beverly | 7 | 2 |
| Milwaukee | — | — | Leominster | 3 | 1 |
| Washington | — | — | Hyde Park | 4 | 1 |
| Providence | — | — | Melrose | 3 | 0 |
| Boston | 220 | 72 | Newburyport | 4 | 2 |
| Worcester | 41 | 17 | Revere | 6 | 1 |
| Fall River | 46 | 28 | Westfield | — | — |
| Cambridge | 27 | 13 | Woburn | 5 | 2 |
| Lowell | 42 | 20 | Peabody | — | — |
| New Bedford | 44 | 22 | Marlboro | 5 | 2 |
| Lynn | 33 | 7 | Attleboro | 5 | 3 |
| Springfield | 23 | 16 | Adams | 2 | 2 |
| Lawrence | 23 | 13 | Clinton | — | — |
| Somerville | 13 | 2 | Gardner | 7 | 3 |
| Brockton | 16 | 6 | Milford | — | — |
| Holyoke | 13 | 6 | Watertown | 10 | 4 |
| Malden | 9 | 5 | Plymouth | — | — |
| Chelsea | 14 | 4 | Southbridge | — | — |
| Newton | 4 | 1 | Weymouth | 6 | 3 |
| Salem | 10 | 7 | Framingham | — | — |
| Haverhill | 13 | 3 | Wakefield | — | — |
| Fitchburg | — | — | Webster | 0 | — |
| Everett | 8 | 1 | Arlington | 4 | — |
| Quincy | — | — | Greenfield | 3 | 1 |
| Taunton | 22 | 9 | | | |

## LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND OTHER OFFICERS OF THE PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDED OCT. 5, 1910.

Banks, Charles E., surgeon. Directed to assume temporary charge at Portland (Quarantine), Me., during the absence of Surgeon J. M. Eager. Oct. 1, 1910.

Eager, J. M., surgeon. Directed to proceed to Naples, Italy, upon special temporary duty. Oct. 1, 1910.

Nydegger, J. A., surgeon. Detailed to represent the Service at the meeting of the Medical Society of the State of Pennsylvania, to be held in Pittsburg, Pa., Oct. 4–6, 1910. Sept. 29, 1910.

Lavinder, C. H., passed assistant surgeon. Granted seven days' leave of absence from Oct. 1, 1910.

Grubbs, S. B., passed assistant surgeon. Granted fourteen days' leave of absence from Sept. 25, 1910, on account of sickness.

McClintic, T. B., passed assistant surgeon. Granted seven days' leave of absence from Sept. 28, 1910, under paragraph 191, Service Regulations.

Rucker, W. C., passed assistant surgeon. Directed to proceed to Elizabeth, N. J., upon special temporary duty. Sept. 28, 1910. Leave of absence for ten days from Sept. 14, 1910, amended to read seven days from Sept. 15, 1910.

Porter, Joseph Y., quarantine inspector. Leave of absence for thirty days from Sept. 20, 1910, revoked.

Bean, L. C., acting assistant surgeon. Granted five days' leave of absence from Oct. 1, 1910.

Gustetter, A. L., acting assistant surgeon. Granted six days' leave of absence from Oct. 1, 1910.

Hallett, E. B., acting assistant surgeon. Granted seven days' leave of absence from Oct. 1, 1910.

McDaniel, S. E., acting assistant surgeon. Granted fourteen days' leave of absence from Oct. 18, 1910.

McLarty, A. A., acting assistant surgeon. Granted seven days' leave of absence from Oct. 3, 1910.

Small, E. M., acting assistant surgeon. Granted eight days' leave of absence from Oct. 3, 1910.

Tappan, J. W., acting assistant surgeon. Granted twenty days' leave of absence from Oct. 1, 1910.

Townsend, F., acting assistant surgeon. Granted four days' leave of absence from Oct. 6, 1910.

Wetmore, W. O., acting assistant surgeon. Granted one day's leave, Sept. 19, 1910, under paragraph 210, Service Regulations.

Keen, W. H., pharmacist. Granted seven days' leave of absence from Sept. 19, 1910, under paragraph 210, Service Regulations.

Ott, C. R., pharmacist. Granted twenty-nine days' leave of absence from Oct. 11, 1910.

### BOARD CONVENED.

Board of medical officers convened to meet at Stapleton, N. Y., Oct. 7, 1910, for the purpose of making a physical examination of a cadet of the United States Revenue Cutter Service. Detail for the board: Surgeon H. W. Austin, chairman; Passed Assistant Surgeon W. A. Korn, recorder. Oct. 4, 1910.

## SOCIETY NOTICES.

Eighth Massachusetts State Conference of Charities. — The eighth conference will be held at Fitchburg, on Oct. 26, 27 and 28.

Parker B. Field,
279 Tremont St., Boston. *Secretary.*

Suffolk District Medical Society. — Stated meeting, Saturday, Oct. 29, at 8.15 P.M. "What Medical Societies can do for the Health of the People." Paper: By Mr. John Ritchie, Jr. (For two years member of the Boston Board of Health.) Discussion: Formal discussion by invited guests will be omitted; instead, it is hoped that there will be free general discussion by the members of the Society. Business: Election of Nominating Committee. Revision of the By-Laws of Suffolk District Medical Society. Refreshments after the meeting.

Geo. H. Monks, *President.* David D. Scannell, *Secretary.*

## RECENT DEATHS.

Gallison, Henry Hammond, M.D., M.M.S.S., died in Cambridge, Oct. 12, 1910, aged sixty years.

Dowling, Charles Joseph, M.D., M.M.S.S., died in Springfield, Sept. 26, 1910, aged thirty years.

Dr. David P. Butler, who died recently of endocarditis, at Rutland, Mass., was born in Boston in 1873, the son of a physician. He received his medical degree from Boston University in 1898, and for some years had been in charge of the Rutland Cottage Sanatorium for Tuberculosis.

Dr. John Veitch Shoemaker, who died of nephritis, at Philadelphia, on Oct. 11, was born in Chambersburg, Pa., on March 18, 1852. He graduated from Dickinson College in 1872 and from the Jefferson Medical College in 1874. He was for a time demonstrator of anatomy at the latter institution, and in 1876 became lecturer on anatomy and diseases of the skin at the Philadelphia School of Anatomy. Later he was for some years senior physician to the Medico-Chirurgical Hospital, Philadelphia, and surgeon-general of the National Guard of Philadelphia. Professionally he was perhaps best known for his numerous contributions on dermatology and therapeutics to various medical journals. He is survived by his widow.

Dr. De Forest Willard, who died on Oct. 15 at Lansdowne, a suburb of Philadelphia, was born in Hartford, Conn., in 1846. He was for many years professor of orthopedic surgery at the University of Pennsylvania, and at one time president of the American Orthopedic Society and of the American Surgical Society.

## BOOKS AND PAMPHLETS RECEIVED.

Treasury Department, Hygienic Laboratory, Bulletin No. 65. Facts and Problems of Rabies. By A. M. Stimson.

Treasury Department, Hygienic Laboratory, Bulletin No. 69. The Effects of a Restricted Diet and of Various Diets upon the Resistance of Animals to Certain Poisons. By Reid Hunt.

Treasury Department, Public Health Bulletin No. 34. Maritime Quarantine. By Leland E. Coper.

Treasury Department, Hygienic Laboratory, Bulletin No. 66. 1. The Influence of Age and Temperature on the Potency of Diphtheria Antitoxin. By John F. Anderson. 2. An Organism Isolated from Water, Agglutinated by the Serum of Typhoid Fever Patients. By W. H. Frost. 3. Some Considerations on Colorimetry and a New Colorimeter. By Norman Roberts. 4. A Gas Generator in Four Forms for Laboratory and Technical Use. By Norman Roberts.

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# Tufts College Medical School

## FACULTY

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FREDERIC M. BRIGGS, M.D. . . . Secretary and Professor of Clinical Surgery
JOHN L. HILDRETH, M.D., LL.D. . . . Professor of Clinical Medicine, Emeritus
ERNEST W. CUSHING, M.D., LL.D. . . . Professor of Abdominal Surgery and Gynecology
EDWARD O. OTIS, M.D. . . . Professor of Pulmonary Diseases and Climatology
HENRY J. BARNES, M.D. . . . Professor of Hygiene
CHARLES A. PITKIN, Ph.D. . . . Professor of General Chemistry
MORTON PRINCE, M.D., LL.D. . . . Professor of Diseases of the Nervous System
HENRY B. CHANDLER, M.D. . . . Professor of Ophthalmology
JAMES S. HOWE, M.D. . . . Professor of Dermatology
EDWARD M. PLUMMER, M.D. . . . Professor of Otology
EDWARD B. LANE, M.D. . . . Professor of Mental Diseases
GEORGE H. WASHBURN, M.D. . . . Professor of Obstetrics
FRANK G. WHEATLEY, M.D. . . . Professor of Materia Medica and Therapeutics
JOHN J. THOMAS, M.D. . . . Assistant Professor of Neurology
WILLIAM E. CHENERY, M.D. . . . Professor of Laryngology
JOHN L. AMES, M.D. . . . Associate Professor of Practice of Medicine
CHARLES M. WHITNEY, M.D. . . . Professor of Genito-Urinary Surgery
E. CHANNING STOWELL, M.D. . . . Assistant Professor of Children's Diseases
ROBERT W. HASTINGS, M.D. . . . Assistant Professor of Children's Diseases
GEORGE A. BATES, M. Sc. . . . Professor of Histology
EUGENE THAYER, M.D. . . . Demonstrator of Anatomy
GEORGE W. KAAN, M.D. . . . Professor of Clinical Gynecology
GEORGE V. N. DEARBORN, M.D., Ph.D. . . . Professor of Physiology
CHARLES F. PAINTER, M.D. . . . Professor of Orthopedic Surgery
TIMOTHY LEARY, M.D. . . . Professor of Pathology and Bacteriology
CHARLES D. KNOWLTON, M.D. . . . Assistant Professor of Theory and Practice of Medicine
ALFRED W. BALCH, M.D. . . . Assistant Professor of Chemical Pathology and Toxicology
FRANK L. D. RUST, M.D. . . . Associate Professor of Ophthalmology
HARRY H. GERMAIN, M.D. . . . Assistant Professor of Anatomy
DAVID D. SCANNELL, M.D. . . . Assistant Professor of Clinical Surgery
O. CUSHING-LEARY, M.D. . . . Assistant Professor of Pathology and Bacteriology
ROBERT M. MERRICK, M.D. . . . Assistant Professor of Children's Diseases

## OTHER INSTRUCTORS

WILLIAM SCHOFIELD, LL.B. . . . Lecturer in Medical Jurisprudence
WALTER E. FERNALD, M.D. . . . Lecturer in Mental Diseases
EDWARD L. TWOMBLY, M.D. . . . Instructor in Clinical Gynecology
BENJAMIN TENNEY, M.D. . . . Instructor in Clinical Surgery
FRANCIS J. KELEHER, M.D. . . . Instructor in Medical Jurisprudence
ELMOND A. BURNHAM, M.D. . . . Instructor in Clinical Medicine
JOHN M. CONNOLLY, M.D. . . . Assistant in Diseases of Children
CHARLES B. DARLING, M.D. . . . Instructor in Clinical Gynecology
WM. R. P. EMERSON, M.D. . . . Instructor in Diseases of Children
EDWARD N. LIBBY, M.D. . . . Instructor in Clinical Medicine
HARRY G. CHASE, B.S. . . . Lecturer in Physics
RICHARD F. CHASE, M.D. . . . Instructor in Clinical Medicine
ARTHUR W. FAIRBANKS, M.D. . . . Instructor in Neurology
JOHN S. MAY, M.D. . . . Instructor in Obstetrics
THEODORE C. ERB, M.D. . . . Instructor in Obstetrics
FREDERICK W. STETSON, M.D. . . . Assistant in Clinical Medicine
FRANCIS D. DONOGHUE, M.D. . . . Instructor in Clinical Surgery
EDWARD E. THORPE, M.D. . . . Instructor in Chemical Pathology
HENRY F. R. WATTS, M.D. . . . Assistant in Clinical Medicine
THOMAS F. GREENE, M.D. . . . Assistant in Obstetrics
GUY M. WINSLOW, Ph.D. . . . Instructor in Histology
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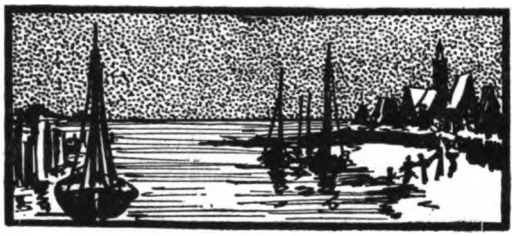

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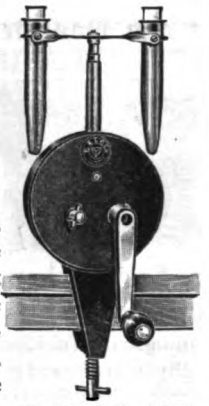

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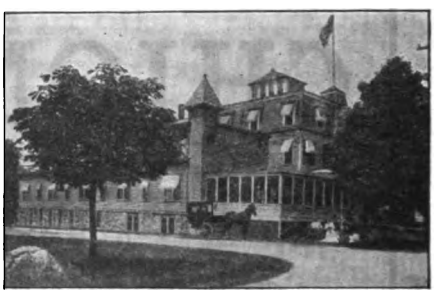

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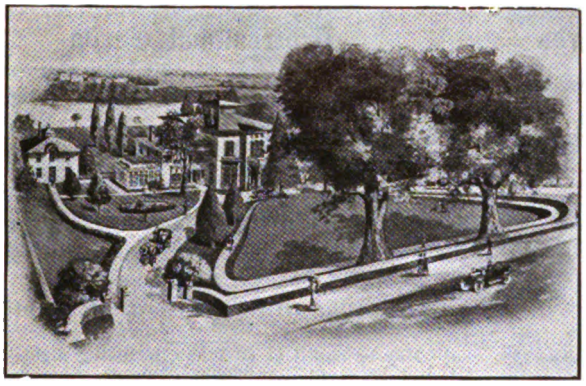

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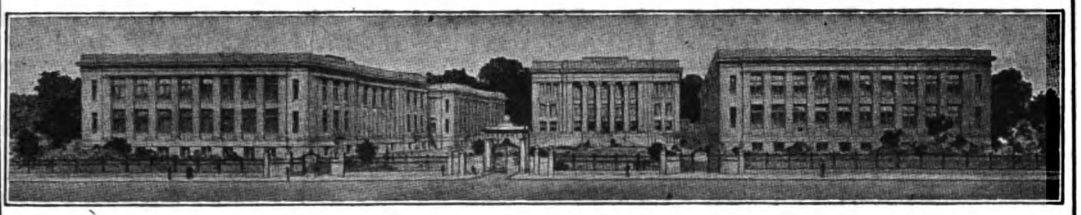

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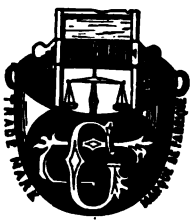

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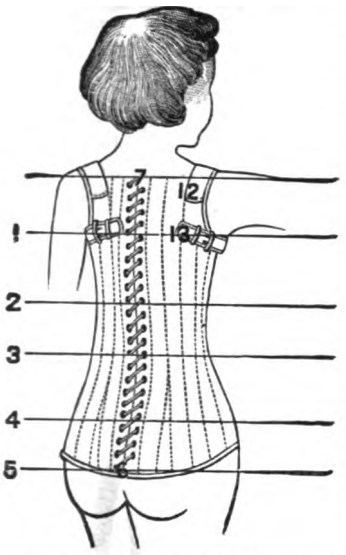


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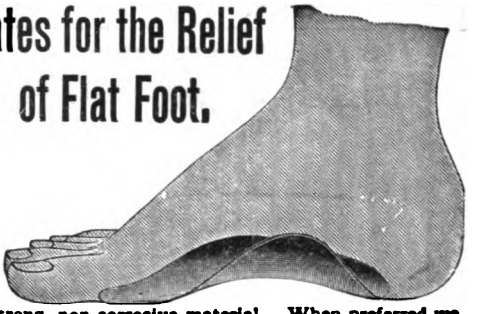

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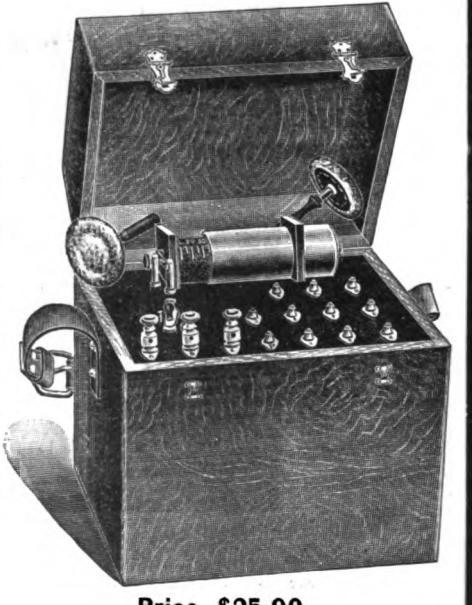

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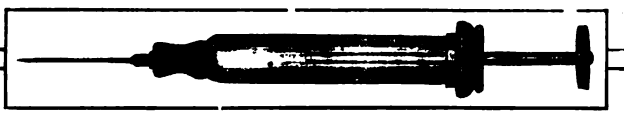

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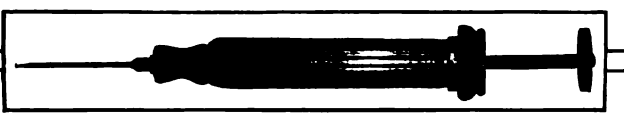


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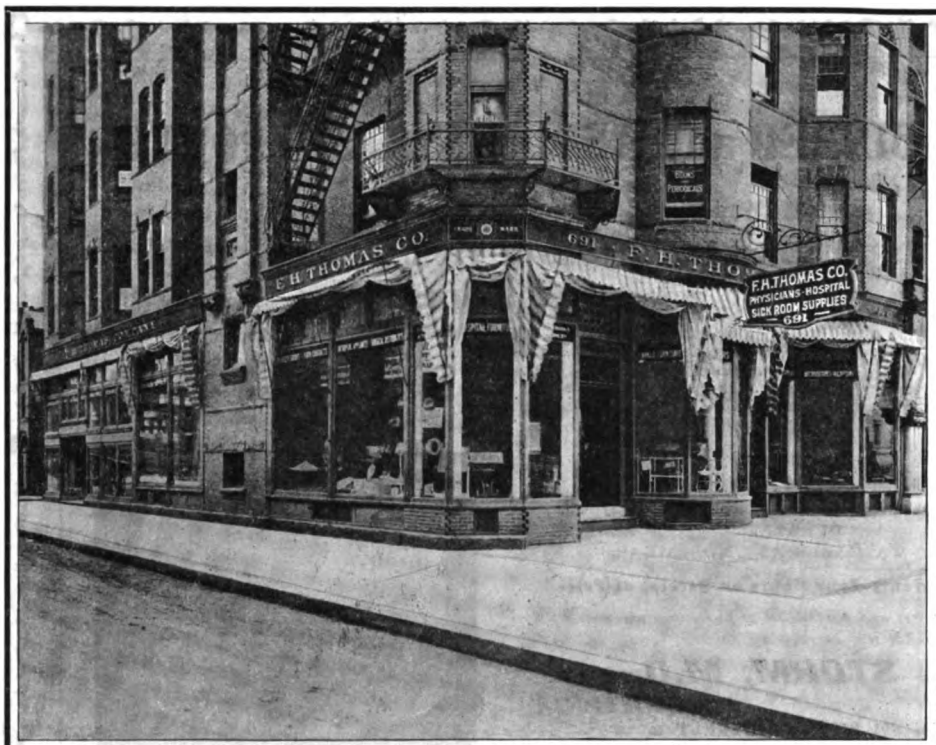


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## Original Articles.

### CHOLELITHIASIS.

BY RICHARD F. CHASE, M.D., BOSTON.

I HAVE realized for some time that, of the patients referred to me with digestive disturbances, a considerable per cent of them, comparatively, have gall-bladder affections, most often gallstones. So on looking over my records I was not surprised to find that in every one hundred patients there were from five to nine whose symptoms were attributable to cholelithiasis. I am of the impression that I find this condition as often, perhaps more often than any other, the cause of secondary digestive symptoms. Since about 70% of my patients are referred by physicians, and the balance of them have usually been treated by several physicians before coming to me, I have come to the conclusion that cholelithiasis is more often mistaken for primary digestive diseases by the general physician than is the case with any other organic disease. It is not, of course, the typical cases of gallstones that are mistaken, but those cases lacking one or more of the usual symptoms upon which reliance is placed in diagnosis. As in peptic ulcer, it is usually hemorrhage that is wanting, so in gallstone disease we find it is usually jaundice. I have arrived at this conclusion because, of the cases referred to me, jaundice has been observed in less than 5% of them. Since it is the absence of this symptom that seems to be the chief stumbling in diagnosis, it occurs to me, and, in fact, I have been quite convinced through various experiences with physicians relating to this feature, that the very large per cent of gallstone cases not presenting the symptom of jaundice is far from being fully realized. Furthermore, for the foregoing reason, it follows that the very common occurrence of cholelithiasis is not duly recognized.

Now, of all autopsies, gallstones are found in about 7%, — Moynihan says approximately 10%, — while in autopsies of persons over sixty years of age they are encountered in 25%, or, in other figures, one person in every four over sixty years old has gallstones. It is evident, then, that cholelithisis is of very common occurrence. More common, is it not, than the reader realized? Just what per cent of patients having gallstones present symptoms, it is difficult to determine. We do know, however, that when symptoms occur it is most often between the thirtieth and fiftieth year of life. We also know that gallstones are three or four times more common in women than in men. A full realization of these facts, combined with the knowledge that the symptoms arising from gallstones are, in the main, of a digestive type, will, I believe, lead one to more often think of this condition, and to think of it as a common cause of digestive disturbances. Moreover, a realization of the fact that jaundice occurs in probably less than one third of the cases of gallstones will render one far less dependent on this symptom in diagnosis than appears to be the case at the present time.

Moynihan says: "Patients refer their trouble to the stomach and not to the liver. It requires the unmistakable evidence of jaundice to associate the suffering with gallstones in the minds of all patients and of not a few medical men, yet jaundice is an infrequent and inconstant symptom of gallstones." Richardson says: "Many practitioners to-day believe that jaundice is essential to the diagnosis of gallstones. In the great majority of cases jaundice is anatomically impossible."

As stated, the symptoms of cholelithiasis are, in the main, those of "indigestion," and it is for this reason that these cases are referred to the internist for diagnosis or treatment. Before referring to the gastric symptoms and findings, let me say a few words regarding some of the other symptoms of cholelithiasis.

Colic is, to the patient and physician, the most prominent symptom; its character is generally well known, though modifications in its severity, duration and location may at times puzzle one. Many physicians seem to believe that the pain is located in the gall-bladder region and only there, but very often (Ewald says in most cases) the pain is referred to the stomach; it usually extends through to the back, and, according to Murphy, "in seven cases out of ten it is referred to the right subscapular region," occasionally to the left. Besides biliary colic, it should be understood that there are very few conditions which cause recurrent attacks of violent pain in the region of the gall bladder or in the epigastrium. Mixter says: "It is important to recognize the fact that recurrent attacks of pain in the region of the liver almost always mean gallstones. If one goes on that idea, and with a history of frequent recurrent attacks of pain makes an exploration, it is very seldom that he goes wrong." Pain frequently, and tenderness of the liver almost always, follow the colic, and in many cases the liver is found enlarged, at least for a few days; occasionally it is found constantly enlarged.

Regarding the tender area on the right side behind, on a level with the twelfth dorsal vertebra, and extending at times to the posterior axillary line, described by Boas.[1] Moynihan says: "I consider the search for this tender area a necessary part of the examination. . . . It is undoubtedly a sign of great value." Rarely, it seems, can the gall bladder be palpated. I was surprised at Moynihan's statement that "I have once been able to feel a gall bladder filled with stones and at operation to verify my observation." I had thought that palpation of the gall bladder was of more frequent occurrence than the above statement would seem to indicate. In one such case I recall, the patient could feel the tumor, and she stated that it always swelled at night,— probably due to its increased bile content at this time. The gall bladder contained over one hundred stones and several ounces of mucopurulent fluid.

[1] Münch. med. Wochenschr., April 15, p. 604.

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JAUNDICE.

Brewer states that jaundice was absent in from 80 to 90% of all his operative cases of gallstones. Murphy has found this symptom present in only 14% of his cases at any time during the course of the disease. Different writers give various figures. However, it is very evident that this symptom is not observed as often as is generally believed. Since the symptom is absent in so many cases, it loses much of its diagnostic value. With the progress in internal medicine, we should be well past that point where it was once considered necessary to delay the diagnosis of gallstones until the appearance of jaundice, the diagnosis of peptic ulcer until hematemesis occurred, and the diagnosis of gastric cancer until the appearance of the cardinal symptoms.

Jaundice when present usually occurs only after one to several days from the beginning of the colic, and in many cases may then be detected only by careful examination of the sclera, the urine and the feces; in some cases it does not last longer than forty-eight to seventy-two hours. This symptom is certainly often overlooked. In many cases the colic subsides after the administration of morphine, so that by the following day the patient feels practically recovered, and the physician may not see the patient a second time, thereby missing his best opportunity of obtaining a history, of palpating for tenderness and enlarged liver, etc. He has quit the case agreeing perhaps with the patient's own diagnosis, "acute indigestion" due to some article of diet which the patient is usually prepared to name. If the patient has had stomach trouble in the past and is subject to similar attacks, the diagnosis may seem all the more plausible. With a recurrence of the attack, which comes sooner or later, unless jaundice happens to be detected, the same diagnosis is probably again made. Thus the case goes on; if stomach symptoms are present between attacks, the patient is treated for the same until the physician at length discouraged with his lack of success refers the patient to an internist, or, as often happens, the patient takes matters in her own hands and seeks one.

When the patient reaches the internist, he, or more often she, is subjected to a careful history and physicial examination. The history alone is usually sufficient to direct one to the probable diagnosis. Remember that on the internist's history blank there should always be the word "colic," and that questions regarding the same should be asked. The internist knows that the forty or more simple articles of diet mentioned by the patient as the causes of her attacks do not as a rule in any digestive disorders cause sufficient epigastric pain to necessitate the use of morphine, hence he thinks of other causes. Herein he has an advantage over the general practitioner. But to prove the presence or absence of gastric disease, the stomach must be examined. Dr. Richardson says: "The distinction between gallstones and gastric diseases is chiefly important because under a wrong diagnosis of organic disease we may operate uselessly, as in simple dyspepsia, gastralgia, atony, gastritis and the like. On the other hand, we may, under a wrong diagnosis of functional disturbance, withhold an imperative operation for gastric cancer, ulcer, strictured pylorus or gallstones."

Such distinction can be made only by careful observation of the patient, in some cases for a month or six weeks' time, and by the intelligent employment of all the known methods of gastric examination. Besides differentiating from gallstones the various gastric diseases mentioned, it is also necessary to determine the gastric conditions accompanying gallstones, and particularly in those patients declining operation, that proper treatment for both conditions may be administered.

Some patients with gallstones have digestive symptoms only during attacks of colic and for a few days thereafter; others have them both with and between attacks. In the latter cases the symptoms tend to increase in severity as time goes on.

STOMACH FINDINGS.

Immediately following an attack of biliary colic one most often finds a diminution or absence of HCl, and also that the stomach does not empty itself in the normal length of time. These findings show that both the secretory and motor functions of the stomach are impaired. In many cases after a few days or weeks these functions are restored to the normal, yet in some cases several weeks of dietetic, medicinal and mechanical treatment are necessary to restore them. In many cases several weeks after an attack of colic we find the stomach normal, or possibly an occasional hyperchlorhydria; on the other hand, we not infrequently find true cases of secondary chronic gastritis, with the absence of HCl and other usual findings. Frequently repeated attacks of colic, with inflammation in and about the gall bladder, probably most often brings about this condition through interference with the blood supply of the stomach. Adhesions from the gall bladder to the pylorus at times produce severe cases of gastric dilatation. Thus it is seen that various gastric conditions accompany cholelithiasis. In most cases removal of the gallstones, the breaking up of adhesions, etc., overcome all symptoms, so that the medical treatment of these various conditions becomes necessary only in those cases declining operation. The per cent of patients, however, declining operation for their gallstones is a pretty large one. In some cases of gastritis accompanying gallstones, the condition may be entirely overcome by medical treatment, and lesser disturbances are more quickly and more easily relieved. Proper treatment directly following attacks of colic undoubtedly prevents the development of many of these troublesome digestive disturbances.

Lavage of the stomach is one of the best methods by which to overcome recurrent vomiting, so annoying and, in some cases, so threatening to the patient's life. Lavage at times will stop biliary colic as well as morphine, and it is the

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best of methods in treating gastritis, atony and dilatation. The rules for the dietetic, hygienic and medicinal treatment are much the same as those that govern the treatment of like conditions due to other causes.

In a differential diagnosis, besides the gastric conditions already mentioned, we have particularly to consider gastric crises, renal colic and Dietl's crises, appendicitis in its various forms, pancreatitis, angina pectoris, affections of the right lung and pleura, and other diseases of the liver.

The average case of cholelithiaisis is not difficult of diagnosis, yet in some cases a differential diagnosis is extremely difficult and at times impossible by medical means. In some patients with apparently clear symptoms of gallstones, no stones are found; in other patients gallstones are found as the cause of trouble where least expected, but these are the exceptional cases.

We should not forget that there are many persons who have gallstones and yet have never presented the usual symptoms. It is without doubt among this class of patients that we should seek the cause of many of the obscure reflex gastric conditions.

### TREATMENT.

First and foremost it should be understood that stones in the gall bladder probably cannot be dissolved by the administration of medicine. Certain experiments have yielded just sufficient results to lead the hopeful to believe that time and perseverance in the use of certain agents may accomplish this desired result, but abundance of clinical experience fails to prove that such is the case. We cannot in any case guarantee to ward off or delay an attack of colic, yet in many cases it certainly seems as if such result is attained, as there is no recurrence for years. Confinement to bed after an attack of colic until inflammatory conditions have subsided should be insisted upon. Kolisch believes that by careful attention to diet, medication, etc., and abstinence from sports and other forms of violent exercise for one year after the colic, latency of gallstone disease is frequently obtained. As to medicinal agents for the gall-bladder conditions and the usual digestive disturbances, I know of none better than some such combination as that recommended by Billings, as follows:

℞. Sodii Salicylatis, 1.0
Sodii Phosphatis, 2.0
Sodii Sulphatis Exsic., 6.0
M. Sig. ʒss to ʒj in glass of hot water thirty minutes before meals.

The general attitude of both physicians and surgeons regarding operative procedure in most cases of cholelithiasis is too well fixed to warrant much discussion. Those physicians, however, who feel it their duty to advise operation in every case as soon as the diagnosis is made, and who have not done so, may find some consolation in the statement by Richardson: "I have not a few patients in whom I know gallstones to exist, and in whose cases I have not as yet advised operation. Knowing, however, to a certainty that stones are present in the gall bladder, knowing also the precise anatomical conditions present, I am prepared to advise operation the moment the first symptom of impaction appears, unless this impaction should be of the briefest and most trivial character."

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## FURTHER OBSERVATIONS ON THE WASSERMANN REACTION FOR SYPHILIS.

BY WM. P. BOARDMAN, M.D., BOSTON.

Since the first publication concerning the so-called Wassermann complement fixation test for syphilis in 1906, the test has been performed by many investigators on thousands of cases of syphilis, and in other diseases of all sorts, so that a fairly conclusive idea of its limitations in certain directions may now be had.

In spite of much careful scientific work on the subject, the theory upon which the reaction is based is still obscure.

Though many modifications have been suggested to simplify the method, and though a majority of these give a higher percentage of positive results in syphilitic cases, the most of them have also been found to give positive results in many non-syphilitic cases and are, therefore, useless. In regard to the suggestion of H. Schlimpert,[1] which is also used by Noguchi in his book on serum diagnosis, and according to which the reagents are used in small amounts, the method remaining otherwise the same as in the original Wassermann reaction, this scheme has a distinct advantage in that it uses less blood from the patient and less guinea pig's blood. In regard to Noguchi's own modification, using a human-rabbit serum for amboceptor instead of the sheep-rabbit of the Wassermann test, and small amounts of the patient's serum without inactivation, enough has already been done with this to show that it, like the many other modifications, gives a higher percentage of positive results in syphilitics, but, like the others (though not nearly as often), it gives occasional positive results in non-syphilitics.[2] I have had no opportunity to try this test except in about twenty-five cases, and in these it gave the same results as the Wassermann; except in one case of a perforating ulcer of the foot, in which the Noguchi was positive and the Wassermann negative. But this series is obviously too small to be the basis of any personal conclusions.

My own results with the Wassermann reaction, based on a little over 500 cases, are with the original Wassermann technic except that I used an

[1] Deut. Med. Wochenschr., vol. xxxv, no. 32, p. 1386.
[2] Fox: Jour. Cutan. Dis., vol. xxvii, p. 338. Kaplan: Jour. Med. Sci., vol. xxxix, no. 1, p. 82.

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alcoholic extract of normal liver as antigen. The blood in practically every case was taken from the patient's ear (about 1.5 to 2 ccm.), which was found to be the simplest method for obtaining blood in the average case.

I have tabulated all my results as positive or negative, classifying all doubtful or slight reactions as negative, so that my figures show a rather low percentage of positive results, but I think I have very seldom erred in reporting a positive reaction in a non-syphilitic case, as one is liable to do if he does not adhere fairly closely to this classification.

I have arranged the following table to show in a general way the percentage of positive reactions obtained by some other investigator in the various broad classes, making possible a comparison of these figures with my own.

| | Cases collected by Noguchi. | Noguchi's own cases. | Fox. | Kaplan. | König. | Reinhart. | Jessionek and Meirowsky. | Bayley. | Basset-Smith. | McIntosh. | Hauck. | Knopfelmacher. | Total. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Primary: | | | | | | | | | | | | | |
| Total cases, | 416 | 23 | 7 | 138 | 9 | 144 | 30 | 22 | .. | 27 | ... | .. | 816 |
| Positive, | 291 | 17 | 7 | 122 | 7 | 83 | 20 | 17 | .. | 20 | ... | .. | 579 |
| Negative, | 125 | 6 | 0 | 16 | 2 | 61 | 10 | 5 | .. | 7 | ... | .. | 237 |
| %+ | 70 | 74 | 100 | 88 | 77.7 | 57.6 | 66.6 | 77 | .. | 74 | ... | .. | 70.9 |
| Secondary: | | | | | | | | | | | | | |
| Total cases, | 1,605 | 79 | 37 | 281 | 42 | 400 | 93 | 23 | 57 | 92 | ... | .. | 2,801 |
| + | 1,434 | 69 | 36 | 242 | 42 | 386 | 90 | 21 | 55 | 78 | ... | .. | 2,531 |
| − | 171 | 10 | 1 | 39 | 0 | 14 | 3 | 2 | 2 | 14 | ... | .. | 270 |
| %+ | 89.3 | 87.4 | 97 | 86 | 100 | 97 | 97 | 91 | 96 | 85 | ... | .. | 88 |
| Tertiary: | | | | | | | | | | | | | |
| Total cases, | 581 | 65 | 32 | 191 | 12 | 97 | 48 | 61 | 7 | 17 | ... | .. | 1,111 |
| + | 464 | 52 | 23 | 140 | 9 | 87 | 42 | 52 | 4 | 10 | ... | .. | 883 |
| − | 117 | 13 | 9 | 51 | 3 | 10 | 6 | 9 | 3 | 7 | ... | .. | 228 |
| %+ | 79.9 | 80 | 72 | 73 | 75 | 89 | 87.5 | 85 | 57 | 59 | ... | .. | 79.5 |
| Latent: | | | | | | | | | | | | | |
| Total cases, | 2,094 | 59 | 54 | 79 | 23 | 170 | 434 | .. | 7 | ... | ... | .. | 2,820 |
| + | 1,014 | 37 | 25 | 41 | 13 | 112 | 208 | .. | 1 | ... | ... | .. | 1,451 |
| − | 1,080 | 22 | 29 | 38 | 10 | 58 | 226 | .. | 6 | ... | ... | .. | 1,469 |
| %+ | 48 | 63 | 44 | 52 | 56 | 66 | 48 | .. | 14 | ... | ... | .. | 49.7 |
| Tabes: | | | | | | | | | | | | | |
| Total cases, | 216 | 18 | 3 | 205 | 3 | 32 | 19 | .. | 4 | ... | ... | .. | 500 |
| + | 135 | 8 | 3 | 125 | 2 | 27 | 10 | .. | 2 | ... | ... | .. | 312 |
| − | 81 | 10 | 0 | 80 | 1 | 5 | 9 | .. | 2 | ... | ... | .. | 188 |
| %+ | 62.5 | 44 | 100 | 61 | 66.6 | 84 | 53 | Smith | 50 | ... | ... | .. | 62.4 |
| General paresis: | | | | | | | | | | | | | |
| Total cases, | 498 | ... | ... | 61 | .... | .... | 7 | 10 | .. | 7 | 17 | .. | 600 |
| + | 439 | ... | ... | 40 | .... | .... | 6 | 9 | .. | 7 | 17 | .. | 518 |
| − | 59 | ... | ... | 21 | .... | .... | 1 | 1 | .. | 0 | 0 | .. | 82 |
| %+ | 88 | ... | ... | 65.5 | .... | .... | 86 | 90 | .. | 100 | 100 | .. | 86.3 |
| Congenital: | | | | | | | | | | | | | |
| Total cases, | 125 | ... | 1 | 20 | .... | .... | 18 | .. | .. | 4 | ... | 33 | 201 |
| + | 118 | ... | 1 | 18 | .... | .... | 16 | .. | .. | 2 | ... | 29 | 184 |
| − | 7 | ... | 0 | 2 | .... | .... | 2 | .. | .. | 2 | ... | 4 | 17 |
| %+ | 94.4 | ... | 100 | 90 | .... | .... | 89 | .. | .. | 50 | ... | 88 | 91.5 |

Of syphilitic cases I have examined the blood in 267 cases, including parasyphilitic and latent cases.

Of these, 23 were primary lesions showing no secondary manifestations. Eleven of these, or 49%, were positive. As has been very generally found by other investigators, most of the positive results were found in the cases of long duration, — over three weeks, — the reaction sometimes not appearing until the fifth or sixth week, and even later in a few cases. My percentage is much lower than that shown in the table of collected cases from the literature, and I account for this by the fact that many investigators have classified among primary lesions those in which the chancre is still active, but in which secondary manifestations have already appeared; such cases I have classed among the secondary cases. My results show clearly that in the earlier primary lesions the search for the spirocheta pallida is a much more reliable test, but in the older lesions, especially those in which the chancre has been treated locally, or has nearly or entirely healed over, the spirocheta is very seldom found and it is just at this time that the Wassermann reaction begins to become positive and the patient is getting restless over the long wait for secondary manifestations to appear.

In secondary cases showing lesions at the time of examination I have tried the reaction 59 times on 57 patients, with 49 cases giving a positive and 8 a negative reaction, or 86% positive. Omitting treated cases, there were only 2 negative in the series, giving 98% positive. One of these two was a case showing a macular rash on the forehead and severe headache, both of which cleared up under anti-syphilitic treatment. The other was a beginning secondary eruption which gave a positive reaction a short time later, showing that the antibody is very late in appearing in occasional cases.

In tertiary cases showing manifestations at the time the test was made there were 88 cases, 78 positive and 10 negative, or 88.6% positive.

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Among the negative cases 2 were very chronic cases of lesions of the nasal septum which had persisted for years with frequent exacerbations and more or less frequent courses of treatment. One case was a perforating ulcer of the foot diagnosed as syphilitic clinically. Three were cases of cerebral syphilis and one an old case of leukoplakia who also showed a serpiginous tubercular syphilide on the leg, both of which were much benefited by subsequent treatment. The others were all cases which had received considerable antisyphilitic treatment.

In cerebral syphilis, 8 of 11 cases, or 77%, were positive. This is higher than has generally been found by other investigators, whose figures were as low as 16% in one series. I think that this may be due to the fact that some of the cases where the diagnosis was rather uncertain clinically have been classified under the list of cases of doubtful diagnoses in my series which possibly should belong to this class. I have only had 4 cases of spinal syphilis, all of which were positive.

Of latent cases, meaning by this term patients who gave a sure history of syphilis or showed unmistakable scars of syphilis, but no active syphilitic lesions at the time of examination, there were 51; 23, or 45%, of which were positive. This corresponds fairly well with the average found in the literature. The earlier cases, that is, those within three years of the primary infection, were only 23% positive. This includes many cases which had been under long and careful treatment, which accounts for the low percentage. The cases of more than three years' duration, including some very old cases who were undoubtedly completely through with the disease, showed 51% positive results. The literature does not bear out these figures of mine, probably showing that my series is far too small to allow definite conclusions. Of 1,423 early latent cases in the literature, 724, or 51%, were positive, and of 1,164 of the late cases, 534, or 46%, were positive. But in the latent cases much depends on the amount of treatment which has recently been undergone and somewhat on the length of time since the last appearance of symptoms of the disease, so that little inference can be drawn from these general figures.

The congenital cases I examined numbered 17, and all but one were positive, or 95%. This was the fetal blood from the placenta of a syphilitic infant who showed definite syphilitic lesions and a positive test two or three weeks after birth. This supports the view generally held that congenital syphilis will almost invariably give a strong positive reaction, but that at birth we may get a negative result due to the fact that the antibodies have not yet developed in the blood.[3]

In contrast with this, it is curious to see how late in life the positive reaction persists, as when an interstitial keratitis develops. I have examined 9 cases of this disease (generally accepted as being due most always to congenital syphilis), and found 7, or 78%, strongly positive. One of the negatives was in a child who was supposed to be tuberculous and gave a strong Von Pirquet reaction, and the other in an elderly woman forty-five years of age. Some of the positive cases were in young women seventeen or twenty years of age.

Of tabetics, my series contains but 22 cases, and only 6 of these, or 27%, showed a positive reaction. Several of the others showed a slight or doubtful reaction, but, as elsewhere in my list, I have classed all such cases as negative. The percentage falls much below that obtained by other authors, for which I can find no adequate reason, except that the number of cases may be too few to draw definite conclusions.

I have only had an opportunity to try the test on two cases of general paresis, and both were negative. Both were very early cases, possibly still doubtful in diagnosis, and it is in these early cases that the negative results are most commonly obtained.

The non-syphilitic cases numbered 161 and included nearly all the more common diseases of the skin and internal organs. Taking up those diseases in which occasional positive results have been reported; first is scarlet fever, of which I have examined 9 cases, all negative, though a few of them did show a very slight reaction, especially just following the fall in the temperature. There was no doubt in my mind, however, but that these were not strong enough to be classed as positive results. Seven cases of malignant disease were all negative, including some cases with marked cachexia.

In pulmonary tuberculosis I have had 8 cases, all but one very advanced. Three of these gave a positive reaction, but on analysis one was an Italian who could give no history on account of his inability to talk English, one a colored man from whom the blood was taken at autopsy and whose clinical record showed a very shady past, though no signs of syphilis were found at autopsy, and the third was a young man who had been with the army in Cuba and the Philippines and admitted having gone through several attacks of gonorrhea and chancroid, but denied ever having had a hard chancre or other signs of syphilis. Neither of these three cases gives much support to the statement made by some authors that advanced tuberculosis often gives a positive Wasserman reaction, though it undoubtedly does so in occasional or rare cases. In severe acute infections, including sepsis, pneumonia and typhoid, I have had uniformly negative results, but I have only examined a few such cases.

As regards treatment and its effects on the reaction, I have had very little opportunity to follow cases along to see when the reaction disappeared under treatment, and still less to find out when the reaction appears after cessation of treatment. All I can say is that on the basis of 53 cases which had received from a few days' to several years' treatment, only 2 showed a negative reaction who had received less than two months' treatment, and a few remained positive for several years under more or less constant treatment. The latter were either cerebral or congenital or very intractable cases of other forms.

[3] Wechselmann: Deut. Med. Wochenschr., vol. xxxv, no. 15, p. 665.

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In general, the more energetic the treatment, whether with mercury or potassium iodide, the more quickly the reaction becomes negative. After cessation of treatment, the reaction often becomes positive again after a very variable time, most commonly with the recurrence of fresh symptoms of the disease. Though no definite figures are at hand, I am of the opinion that it is well to wait a few months after a long course of treatment before trying the reaction in cases where the question of prognosis and completeness of the cure is being worked out. Even after a several months' wait after cessation of treatment, the negative reaction does not have very much definite value. It seems to me, however, that it is one more point on which to base our conclusions as regards a complete cure when considered with the other points found by history and clinical examinations. Another curious effect of treatment which I have seen in one case and which is mentioned by K. Donath[4] is that in some untreated cases of syphilis which give a negative reaction, ten days' to two weeks' treatment is followed by a positive reaction. My case was one of a perfectly evident syphilitic throat lesion which gave a negative reaction at first; then, after about ten days' treatment, a slight reaction which was not strong enough to call positive, and, a week later, the patient still being under mild mixed treatment, a strong positive reaction was obtained. Donath suggests that this may be comparable to the so-called "*provakatorische*" reaction in primary syphilis by which an injection of mercury during the primary stage of the disease sometimes brings out a syphilitic rash within a day or two.

Of special cases which seem to me worthy of record I would mention one of three weeks' duration which healed up rapidly under local treatment with a mild dusting powder, but showed a strong positive reaction shortly after that. The physician who sent me the case agreed that in spite of no other signs of the disease the lesion might have been a hard chancre on account of my positive finding. In another week the chancre had broken down again and a typical syphilitic roseola was present on the body. I think that I speak fairly when I say that without having this positive reaction the average physician would have told this patient that his trouble was not syphilitic and no longer kept him under observation.

In three cases of enlarged liver, all diagnosed as ordinary cirrhosis, the strong positive reaction led to the diagnosis of syphilitic liver, and all three improved at once under antisyphilitic treatment, which latter would probably not have been instituted had it not been for the positive Wassermann reaction.

The diagnosis of syphilitic orchitis was made through the aid of a positive reaction in another case, and the operation for "sarcoma of the testicle" in this patient's case was indefinitely postponed.

Now as regards the value of a positive reaction: About the only diseases which have been found in the literature to give a positive reaction with any great degree of regularity seem to be frambesia, trypanosomiasis and leprosy, and only very rarely does one find a positive reaction in other conditions outside syphilis. The only exceptions that I have seen mentioned in the literature are occasional cases of advanced tuberculosis, and severe septic conditions just before death, rare cases of scarlatina, especially just following the defervescence, malaria, especially a few days after the chills have ceased, and very rarely malignant disease, especially those showing a high degree of cachexia. Certainly from a clinical standpoint in this locality, with the exception of malignant disease, very few of those cases are liable to cause confusion with syphilis in diagnosis. Even in malignant disease a positive result is so rare that it suggests a possible old latent syphilis in addition, in some of the cases.

I, therefore, maintain that a positive reaction has very definite value and almost invariably means syphilis past or present, and in the earlier stages usually means an active lesion.

In regard to the negative reaction, much less definite conclusions can be drawn. In primary syphilis, where so many cases are negative anyhow, even though the lesion be a month old, the negative reaction has no value, though in the latter cases it may be slightly more to be depended upon than in the earlier ones when taken in connection with the clinical features of the case. In active, untreated, secondary lesions, however, the reaction is positive in such a very high percentage of cases that I think a negative reaction means that the lesions are almost surely non-syphilitic, though perhaps not absolutely so. In progressing tertiary lesions the percentage of positives is so high that we can say that a negative reaction has nearly the same definite value, but in cases of very long standing, such as an old leg ulcer of many years' standing, or an old lesion of the nasal septum, one is very apt to get a negative reaction, so that in these cases it has very little value. But in any case of supposed tertiary syphilis it is better to consider the negative finding in conjunction with the clinical evidence and even resort to the therapeutic test, though, as is well known, this also fails in some of these cases of very long standing. In latent cases the negative reaction by itself has little value, as in primary syphilis, for only about 50% are positive in such cases. But with a very indefinite history and no objective signs of a previous syphilis, it seems to me that a negative reaction is still another help in ruling out the presence of syphilis in a doubtful case.

In supposed congenital cases showing lesions at the time of examination, a negative reaction practically rules out syphilis and is of great value, for nearly every case of congenital syphilis showing lesions will give a strong positive reaction, and this even in spite of considerable treatment.

In general paresis it is generally stated that the reaction is nearly always positive, but most of the figures are drawn from cases in insane hospitals where only advanced cases are to be

[4] Berl. Klin. Wochenschr., vol. xlvi, pp. 2015–2017.

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found. Unfortunately, however, in the earlier ones where the diagnosis is still doubtful, the reaction is often negative, so that to depend on a negative reaction here would be quite misleading.

In treated cases one very seldom finds a positive result directly after the usual two or three years of careful treatment, but six months or so later it may help to show whether the disease has run out or not, and even more so if the test is repeated again after another six months' interval, watching the patient meanwhile for any clinical evidence of exacerbation. But I have not been able to produce figures to show the value of applying the test in this way, though it is being tried in several places.

Finally, in syphiliphobia I have seen most gratifying results follow (up to date at any rate) the finding of a negative reaction which gives these poor sufferers something much more definite and tangible than the mere opinion of their physician based on his careful observations. And right here I might mention one of these cases previously diagnosed as syphiliphobia which showed a very strong positive reaction and suggested to me the possibility of a sound and sane basis for the complaints of a few of these discouraging cases.

CONCLUSIONS.

A positive reaction is obtained in a large number of syphilitic cases, and if one adheres to the original Wassermann technic a positive reaction in a suspected case means syphilis almost without exception. A negative reaction in a suspected secondary or tertiary or congenital case means that it is probably not syphilis, but the finding should be used with caution and only in conjunction with clinical evidence and not by itself alone. A negative reaction in a suspected primary case, except one of long duration, and in an early case of general paresis, has very little value. In treated cases it has very little value except some months after treatment has ceased. To sum up, I think we may say that in the Wassermann reaction we have a definite aid to diagnosis, but its value in treatment and prognosis has not yet been carefully worked out.

I am glad to have this opportunity to express my thanks to Dr. Mallory for the use of the City Hospital Laboratory, and to the Boston Board of Health Laboratory for their continued courtesy and their kindness in allowing me the use of certain apparatus. I also wish to thank the staff of the City Hospital and the numerous private physicians who have given me the clinical material in such abundance.

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Sanatorium for Hollanders. — The Christian Benevolent Society for Consumptives has been incorporated to establish a sanatorium for the care of those suffering from tuberculosis. The institution will be located in South Denver and will receive Hollanders from all parts of the United States. The secretary of the institution is Rev. I. Van Dollen, Denver. — *Jour. Am. Med. Asso.*

# THE TECHNIC OF ARTHROTOMY. A REPORT UPON AND DISCUSSION OF ONE HUNDRED AND NINETY-EIGHT CASES.

BY CHARLES F. PAINTER, M.D., AND ANDREW P. CORNWALL, M.D., BOSTON, MASS.

(From the Orthopedic Clinic of the Carney Hospital.)

[Continued from No. 16, p. 606.]

LIPOMATA.

(Male Patients.)

Case 35. L. F., male, thirty-five, married. Operation, March 19, 1902.

A large quantity of fibrin and villous thickening was found throughout the joint; considerable cloudy fluid escaped. At the lower end of the joint wound a row of thickened fringes was found which were removed.

The outer side of joint was opened and a similar condition found. One large finger-like fringe was attached to the capsule in the upper outer part of the joint. The cartilage presented a fairly normal appearance as a whole, except for a few areas which appeared thinner than normal.

Convalescence uneventful.

Discharged April 12, 1902.

Case 36. C. F., male, fifteen, single. Operation, April 8, 1903.

Patient presents a similar condition in both knees. The right was operated upon. Numerous fringes were found, the largest of which was attached to the patellar aspect of the joint.

Convalescence progressive. No pain, temperature or discomfort.

The stitches were removed on the twelfth day. Ninety degrees of motion without pain present at this time.

Discharged April 24, 1902.

Patient refused operation on left knee.

Case 37. T. H., male, twenty-six, single. Operation, Aug. 31, 1903.

Numerous large fringes found and removed. Two incisions were employed for the purpose.

Stitches removed on the eighth day. Forty-five degrees of passive motion present; active motion about 30°.

Nov. 16, 1903. Knee motions normal.

Three months later patient was again operated upon for spurs of the os calcis. No subjective symptoms at this time referrable to knee-joint.

Case 38. A. F. S., male, thirty, single. Operation, Nov. 4, 1903.

Patient was suffering from a villous arthritis, probably of Neisser origin. When joint was opened, about 8 oz. of yellow fluid, viscid in character, were removed. A few short fringes were found attached to under surface of capsule.

Stitches removed on eighth day. In addition to the routine treatment, rubber dam was used at night.

Discharged Nov. 18, 1903.

Massage to thigh and calf continued at Out-Patient Department for several weeks.

April 4, 1904. Patient presents symptoms of foot strain. Plates, showers and exercises.

Aug. 31. Small amount of swelling present for some time, situated to left of the patella. A chart of the fluctuation in size of the knee at Out-Patient Department suggests a hydrops articuli of the intermittent type.

Case 39. F. A. L., male, twenty-eight, married. Operation, April 29, 1904.

Numerous villi found, in greatest abundance as a

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sort of pannus about the posterior borders of the patella and along the edge of the external femoral condyle.

Very rapid convalescence followed removal.

Discharged May 14, 1904.

Case 40. E. D., male, forty-one, married. Operation, May 11, 1904.

A large dark purple fringe found immediately upon opening the left knee-joint. The synovial membrane was thickened throughout. About 1 oz. of clear thick serum was evacuated, containing several pieces of soft, fatty tissue, the largest of which was the size of a pigeon's egg. These were evidently detached lipomata in a state of partial degeneration. Incision over inner surface revealed a small sessile lipoma.

The knee became swollen shortly following the operation. Considerable pain accompained this condition. Patient ran an atypical septic temperature with a leucocytosis of 20,000. A few days later a fusiform swelling appeared over the outer surface of the leg, and an incision was made over fluctuating area three days later. Beneath the muscles was found a quantity of slightly blood-stained pus. A second incision made over the posterior surface of the leg and a smaller quantity of pus of a similar nature found. Following this there was an amelioration of all the symptoms, knee symptoms subsided and wounds closed as rapidly as wicks would permit.

Discharged June 14, 1904.

Oct. 17. Patient had right knee operated upon and several lipomatous masses attached only by fibrinous adhesions were removed.

Stitches removed on seventh day. Motion restricted few degrees. Manipulated, under anesthesia, on tenth day, but patient regained his motion rather slowly.

Discharged Oct. 31, 1904.

Case 41. J. S., male, twenty-nine, married. Operation, July 11, 1904.

Large sessile tumor found in quadriceps pouch above condyles of femur. A few small lipomata also present.

Rapid convalescence and return of function.

Case 42. F. W. E., male, thirty-three, married. Operation, Aug. 29, 1904.

Very large amount of serous exudate when joint was opened. Upon looking into joint all the serous surfaces were seen to be extremely injected or covered with an exudate which could be easily removed. Directly under the patella was found a lipoma the size of a horse-chestnut projecting into the joint cavity; another was attached to the capsular wall on inner side of the patella. When second incision was made, several small roughened areas were found over outer, lower edge of the patella. These were excised and upon examination found to be areas of rapidly proliferating cartilage.

Eight days later wound entirely healed, except for small area about wick.

July 10, 1905. Knee more swollen than at last visit. Fluid increased.

July 17. Probable fibrous or villous changes in capsule.

Jan. 5, 1906. Can voluntarily hyperextend leg when bearing full weight. Slight lateral mobility. Can voluntarily flex leg to normal.

Jan. 6, 1907. Can flex and extend leg to normal. Lateral mobility when bearing weight. Knee bows outward markedly. Joint much enlarged, and marked crepitation can be felt over entire joint in flexion or extension.

Symptoms of tabes detected for the first time. Evidently a Charcot arthropathy.

Case 43. F. J. B., male, twenty-five, single. Operation, Nov. 4, 1904.

A much thickened fatty capsule was found which extended well beneath the surface of the patella. This was removed and nothing abnormal found upon examination.

Nov. 21, 1904. Can flex knee only 15°. Motion slowly increased. Discharged.

Case 44. A. B. R., male, thirty-eight, married. Operation, Jan. 10, 1905.

Four ounces of fluid escaped when joint was opened. Small pannus found near the internal condyle of femur with fatty fringe attached. Both were removed.

Discharged Jan. 24, 1905. Fair immediate result.

March 20. No symptoms referable to joint. Excellent final result.

Case 45. J. P. S., male, twenty-eight, single. Operation, July 17, 1905.

Numerous fibrous fringes found projecting into joint from the internal lateral ligament, in such a position that they might easily be pinched between the joint surfaces whenever motion was attempted. Over the face of the external tibial condyle was noted a small area, 1.5 cm. in length and 0.7 cm. in width, the site of an inflammatory lesion. The semilunar cartilage presents the appearance of having been fractured. The upper end of a tongue-like process could be caught up with forceps, and although it could be detached, it had produced a roughness on the upper joint surface. Cartilage was not removed.

Pathological report: "Specimen consists of three or four irregular shaped masses of a fatty-fibrous nature which show on the smooth surface a thin covering of synovial membrane. Shining through this surface are numerous fine capillary vessels. Fat is held firmly in lobules. No special vascularity noted in the deeper tissues."

Discharged July 29. Patient has had considerable pain, especially at night. Cast applied to-day and split down both sides; instructions given to wear same at night and flannel bandage during the day. Discharged home.

Aug. 1. Less pain. Instructed to begin walking without cast.

Aug. 9. No subjective symptoms from right knee. Some capsular thickening can be palpated, however. Both knees are capable of hyperextension and some knock-knee deformity is present.

April 3, 1907. Complains of pain in left knee. Functionally right knee is in good condition.

Case 46. F. J. H., male, thirty. Operation, March 9, 1906.

Several fringes were excised from the anterior joint surface of the left knee, and many smaller tabs were curetted out, care being taken not to injure cartilage any more than possible.

Convalescence rapid and progressive.

Discharged twelve days after operation.

April 4. No symptoms.

Case 47. H. W., male, twenty-two, single. Operation, Oct. 3, 1906.

Synovia greatly thickened and two large finger-like villous processes removed. A few smaller ones were found which were also excised. No erosions found.

Oct. 12. Patient has 80° of free motion.

Oct. 16. Discharged. Out-Patient record shows no subsequent subjective symptoms.

Case 48. T. W., male, forty-eight, married. Operation, Feb. 2, 1907.

Slight excess of fluid escaped from joint, external cartilage partially detached and small lipoma adherent to infrapatellar fat pad. Silk wick.

Discharged sixteen days later. Motions nearly normal.

Rapid and progressive return to normal function.

Case 49. T. C., male, twenty-one, single. Operation, Oct. 21, 1908.

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Lipoma found adherent to joint capsule below and to both sides of patellar ligament, 1½ inches by ¾ inch by ¼ inch.

Discharged sixteen days later. Pain and swelling entirely disappeared. Motion to a right angle.

Dec. 23, 1908. Flexion to a right angle. Beyond this point flexion is accompanied by "catching" pain. Massage and baking.

Nov. 5. Ridges felt along inner condyle.

℞. K. I., gtts. x, t. i. d., and increase to gtts. xxx, t. i. d.

Nov. 13, 1909. Re-entered hospital. Arthrotomy and small semi-detached piece of cartilage removed from outer femoral condyle.

Dec. 17. Returns to Out-Patient Department. Motion almost to a right angle.

Case 50. A. D., male, twenty-eight, single. Operation, March 10, 1909.

Left knee-joint opened over inner side. Small lipoma found on anterior surface of joint and removed.

March 21. Discharged. Motion to a right angle. Beyond this motion is accompanied by some pain, very little tenderness.

June 28, 1909. Re-entered hospital.

About one month ago began to have pain in left knee. The joint is swollen and tender. Slight atrophy of the thigh and calf. Considerable capsular thickening and slight surface temperature over inner condyle of femur. Question of tuberculosis of soft parts. Plaster cast applied but no relief obtained from symptoms.

July 2. Discovered that patient is addicted to the use of morphine, which is in a large measure held responsible for symptoms.

July 12. Cast removed. No swelling or thickening of capsule. Motions of knee good. Patient still complains of pain. New cast applied with leg in few degrees of flexion.

Discharged.

The detailed description of these cases gives one a fair chance to estimate the success of arthrotomy in this class of patients. As will be seen from a study of the cases subsequently reported, and a comparison with these, there was the greatest number of unfavorable results among this group. There was a higher mortality and more stiff joints, and post-operative manipulations were proportionately more numerous here than elsewhere. The 50 cases belonging to this group show 44 restorations to normal function without infection and without any very protracted convalescence. Six cases were infected. Two of these died. Of the two that died, one was doubtless infected from another case operated upon unadvisedly at the same time and in the same room. The other was a case that had both knees operated upon at the same time, which we now regard as a technical error. The four other septic cases were not explained except in one case, and this now has a normal joint. This should not be classed strictly as sepsis for the joint was scalded by water used to check synovial hemorrhage and the larger part of the synovial membrane sloughed out. One of the cases, a double one, also operated at one sitting, lost her leg above the knee. There is a good deal of evidence that this was a syphilitic subject, but this is not offered in extenuation of the results. If it was, it was just as much an error to have operated it as it was to have infected it. A better showing might be made if the double cases were counted as separate operations, but they have not been so counted. We regard it a serious error to do both knees at one sitting.

The next largest group of cases for which arthrotomies have been performed at this clinic has been that in which the removal of tuberculous disease has been undertaken, and a little space will now be devoted to a consideration of the technic of the two procedures by which this is ordinarily accomplished, viz., excision and erasion.

### TECHNIC OF THE OPERATIONS FOR EXCISION AND ERASION OF THE KNEE-JOINT.

The patient is subjected, twenty-four hours previous to the operation, to the routine preparation as before described.

Strict aseptic precautions are used in the final preparation of the patient in the operating room. A tourniquet should then be applied at about the junction of the middle and upper thirds of the thigh. The classic U-shaped incision is employed with the base just above the tibial tubercle and the arms extending up either side of the knee-joint to points opposite the top of the quadriceps bursa. The patellar tendon is next encountered and cut directly across just below its mid point. The capsule is then incised, and while an assistant grasps the upper end of the severed tendon with a tenaculum and retracts the flap, at the same time gently flexing the knee, all intervening tissue and adhesions are cut by the operator, including the crucial ligaments, if they are not already destroyed by disease. The leg is eventually flexed to about 130°. The joint should then be thoroughly inspected; all diseased synovia should be dissected off. Next the tibial and femoral condyles are inspected and the amount which it is desirable to remove determined upon. Careful section is then made (care being taken to have all contiguous soft parts dissected away), slanting the saw about 5° in order to have the joint in the position of slight flexion.

The head of the tibia is then removed. After this procedure all diseased tissue in posterior portion of the joint should be removed, both bony surfaces and all contiguous tissue swabbed with tincture of iodine. The leg is then extended and the bony surfaces approximated. Three or more chromic catgut sutures may be used to hold the bones in place. A bone drill is employed. Beginning about half an inch below upper surface of tibia, in median line the drill is directed upwards so that it comes through the tibia about one inch from the anterior margin of the cut surface. Two similar holes are made on either side and about one inch distant from the original. The femur is treated in the same manner. The bony surfaces may then be approximated by the assistant and the sutures tied. The assistant has no further duty except to hold these two bony surfaces in close juxtaposition. Any sinus which may be present in the tissues should be thoroughly curetted or dissected out entirely. Several interrupted catgut sutures are used to bring together the capsule of the joint. A semilunar

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portion of flap may be removed and also the patella at the discretion of the operator. The fascia is then brought together with catgut sutures and the patellar tendon is united with three layers of silk or chromicized gut. Skin is closed with interrupted silkworm gut. A wick may be left in either angle of the incision for twenty-four hours. Dry dressing and bandage. Plaster of Paris bandages applied from foot to groin and carefully modelled while the limb is held with great care.

POST-OPERATIVE TREATMENT.

Unless pain and temperature contra-indicate, it is not necessary to examine the wound until the tenth or twelfth day. A large window cut in the cast enables one to make this examination, exposing the entire upper surface of the knee. If a wick has been used it should be removed on from the second to the fourth day.

At the end of second week the patient may sit up. The cast should be changed at the end of the fourth week. Union is usually fairly firm at this time.

Patient may use crutches during sixth week and bear weight at end of eighth week. Cast may generally be removed about the twelfth week. A leather cast may be used for a time after this if necessary, but is not generally required. In some cases a posterior wire splint is indicated immediately after the operation for two to three weeks, after which a cast may be put on for the remainder of the convalescence. The use of wire sutures is not generally desirable because of the frequency of necrosis about them. Of late some operators are attempting to hold the bones for a few weeks by plates similar to those employed by Lane in the open treatment of fractures. Occasionally wire nails are driven up from below through the tibia into the remains of the femoral condyles. Failure to unite after the usual time has always meant, in our experience, that all the disease was not removed and a fresh focus had started up along the line of union of the two bones. Two such cases are among those reported here. In both cases union took place promptly after the secondary operation, and in both cases there was tuberculous tissue lying in between the two bones.

EXCISIONS.

(Male Cases.)

Case 51. T. M., male, forty-six, married. Operation, April 11, 1902.

Knee-joint excised for deformity after old tuberculosis.

Firm fibrous adhesion present. No active disease. Silver wire used to hold bones in apposition. Leg put up in posterior wire splint.

May 14. Normal convalescence. Cast removed and new one applied. Discharged.

June 20. Silver wires removed. About a dram of pus evacuated from pocket near the twisted ends of the outer wire.

July 6. Discharged well.

Case 52. R. M., male, fifteen, single. Operation, Sept. 3, 1902.

Diagnosis: Infantile paralysis with ankylosis of knee.

Attempt made to forcibly correct the knee under anesthesia unsuccessful owing to contracture of hamstrings and posterior capsule. After the usual incision was made and joint exposed, the knee was forcibly flexed and firm adhesions broken. One inch of lower end of femur removed and posterior capsule incised before bone surfaces could be approximated without putting too much tension on popliteal vessels and nerve.

Sept. 11. Wound became septic immediately after operation. Staphylococcus aureus.

Oct. 18. Wound nearly healed. Leg in position of slight genu valgum.

Oct. 20. Discharged.

Dec. 19. Patient wearing split plaster cast. Position slightly improved.

Jan. 16, 1903. High sole advised.

Feb. 13. Patient instructed to leave off wearing cast gradually and begin to bear weight upon the foot.

Case 53. A. D., male, eighteen, single. Operation, March 12, 1903.

Excision of knee. Infantile paralysis.

On April 27, 1903, hamstrings were cut, but complete extension could not be obtained. Patella and surrounding capsular tissues removed. Wedge-shaped piece of bone removed from lower end of femur to correct deformity. Excised bony surfaces approximated and heavy silk sutures used to hold same in place, being passed through periosteum of each bone.

May 25. Discharged. Recovery uneventful.

Oct. 29, 1903. Wearing brace with comfort. No further history.

Case 54. T. E. S., male, eighteen, single. Operation, April 8, 1903.

Old focus of disease found in middle of articular surface of internal tibial condyle. The core, a solid necrotic mass, was removed as a whole, exposing a sound cavity 1 cm. in diameter with necrotic walls. Anterior surface of apposing femoral condyle eroded and an infiltration of the surrounding tissue. Patella, bursæ about joint, and surrounding soft parts removed. Silk sutures used to hold bony surfaces in apposition.

April 28. Wound healed. No pain or discomfort.

May 5. General condition improved. Patient can bear weight on leg without pain.

May 7. Discharged wearing new cast.

Case 55. T. S., male, twenty-nine, single. Operation, Oct. 6, 1903.

Joint surface studded with tubercles. External condyle of femur eroded and cavity found in opposite condyle of tibia without sequestrum.

Oct. 27. Tubercule bacilli found in sputum.

Nov. 10. Discharged. Knee condition good. General condition poor. Patient died a few months later of tuberculosis (general)?

Case 56. D. L., male, twenty, single. Operation, March 9, 1904.

Few adhesions found in joint. No pus. Pannus over condylar cartilage and slight erosion of bone at margin of cartilage. Crucial ligament pulpy and hemorrhagic. Focus in external tibial condyle.

March 10. Patient had some hemorrhage from knee, which was finally controlled by pressure.

March 30. Wound healed. New cast applied.

April 10. Discharged. Excellent result as to function and position.

Case 57. J. P., male, fifty-five, married. Operation, June 24, 1904.

Considerable hemorrhage at the time of operation and for fourteen hours following. Finally controlled by compresses and elevation of the leg.

June 29. Considerable ooze when wicks were removed.

July 15. Discharged. Healing delayed owing to poor general condition of patient.

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Nov. 20, 1905. Union has not been complete, due probably to a fibrous pannus between excised bones, allowing small amount of flexion. Refused operation. Leather cast.

Case 58. T. M. K., male. Operation, Oct. 21, 1904.

Considerable osteoporotic bone curetted out of both condyles of femur and tibia. Operation not unusual otherwise.

Discharged Nov. 23, 1904. No further history obtainable.

Case 59. T. M., male, seventeen, single. Operation, June 14, 1905.

Patella found ankylosed and had to be pried off with chisel. Very firm ankylosis of joint in poor position. Synovial capsule entirely obliterated. Owing to the subluxation of the tibia a wedge-shaped slice of bone thicker than normal had to be removed from the femur. No evidence of active disease found in joint or bone.

June 30. Wound clean. Stitches removed and new cast applied. Good operative result.

Patient died of general tuberculosis several months later.

Case 60. F. B. E., male, twenty, single. Operation, July 24, 1905.

Some tubercular pus found. Joint cavity very small owing to the encroachment of fibrous tissue. Exuberant granulations over internal condyle of femur and up into quadriceps pouch, including that portion of the patella which rides over this area. The internal condylar notch shows extensive tubercular granulations. In the external femoral condyle is a sulcus dividing that surface into separate areas, and it is possible to separate remaining cartilage only with difficulty. The tibia seems remarkably free from involvement in the process. The patella was removed with its adjoining capsule. Most of the granulations were in a state of fatty degeneration. The quadriceps pouch was not as extensively involved as usual and could be dissected out *en masse*. No deep-seated foci were found. The disease was evidently primarily a synovial affair now just beginning to encroach upon the bone. Excision was done owing to the fact that a satisfactory result in motion would not be likely after a simple erasion.

Aug. 13, 1905. Discharged wearing cast.

June 11, 1906. Patient has had leg in cast since above note. Union is imperfect and seems unlikely to be accomplished.

Operation June 12, 1906.

Same incision used and fibrous pannus found across upper surface of tibia with two small foci underneath, each containing a small amount of tubercular pus. Bony surfaces freshened and approximated with kangaroo tendon.

Discharged June 25, 1906.

Six months later examination of patient showed most excellent post-operative result. Patient has had no return of symptoms to present time.

Case 61. A. D., male, twenty-eight, married. Operation, March 30, 1906.

This case was diagnosed as a possible villous arthritis. Linear incision made over outer anterior surface of knee. Considerable villous thickening present. As much as possible of this was removed and sent for pathological examination, the result of which was a diagnosis of tubercular synovitis.

Discharged April 10, 1906.

On April 26, 1907, patient re-entered hospital suffering from an exacerbation of all previous symptoms. Upon examination of the joint swelling, surface temperature and obliteration of all fossæ normally present about the joint was noted. An excision was deemed advisable, but was delayed for three weeks. The lower end of the femur and upper end of the fibula appeared normal. Slight pannus formation noted over almost entire head of tibia. A thick, red, edematous membrane was found enveloping the patella and occupying the quadriceps pouch. The crucial ligaments were involved to an unusual extent, and there was thick gelatinous material extending down to the head of the tibia. Patella unusually large, but not diseased, though it was resected.

Excision of both bones performed and convalescence uneventful.

Discharged May 16, 1907.

No recurrence of symptoms, except a small discharging sinus, up to Aug. 22, 1908, when patient again entered hospital.

A marked tenderness had been gradually developing at the site of the healed sinus at a level with and corresponding to the old joint. Pain pronounced only when standing, which was gradually increased in intensity and duration. Right leg, 2 cm. shorter than left. Right thigh shows 5 cm. atrophy. A compensatory scoliosis of spine present.

Operation Aug. 26, 1908. A 2½-inch linear incision was made on inner side of patellar tendon down to bone. Periosteum dissected back and focus of necrotic bone found in tibia just under the last discharging sinus and at level of previous joint. Same curetted out and tincture iodine applied.

Sept. 3. Patient has had no discomfort from knee since operation. Discharged home.

Nov. 24. Knee has been tender and some pain has been experienced since last operation. X-ray shows evidence of active disease between excised bony surfaces. Patient again re-entered hospital. General condition improved. Former excision exposed through U-shaped incision. An opening was found between the two bones communicating with a cavity in the femur. Similar focus in head of tibia and tubercular tissue found between bones. The parts were cleaned out thoroughly and bones again approximated.

Discharged wearing plaster of Paris cast, Nov. 30, 1908. No recurrence of symptoms to date of writing, 1910. Union solid.

Case 62. G. D., male, twenty-two. Operation, April 13, 1906.

Flow of tubercular pus when joint was opened. Disease limited to synovial membrane, external condyle of femur and quadriceps pouch. The latter was walled off except for small sinus connecting with the joint proper. Recovery uneventful and patient was discharged April 29, 1906.

Three months later physical examination shows no motion at knee-joint. No pain has been experienced and patient was, therefore, instructed to begin bearing weight.

Feb. 11, 1907. Small fluctuating area found over anterior junction of tibia and femur.

℞ X-ray. No subsequent history; x-ray not found.

Case 63. W. M., male, twenty-three, single. Operation, Nov. 21, 1906.

Synovia pale and redundant; process general but of low-grade virulence. Pulmonary symptoms delayed convalescence.

Discharged Dec. 14, 1906. Advised general hygienic treatment.

Pulmonary tuberculosis. Further history not obtained.

Case 64. P. L., male twenty-nine, single. Possibly Charcot joint (?). Operation, Nov. 21, 1906.

Right knee opened over inner aspect. Just beneath skin a cystic cavity not communicating with joint was found, which was formed of redundant fat and fibrous tissue. Joint opened and a small amount of bloody fluid escaped. Internal condyle thickened, friable and

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covered with tubercular-like granulations. Practically entire condyle removed and wound closed.

Dec. 10. Plaster cast applied.

Dec. 12. Discharged.

Dec. 31. Knee in good position. Split plaster and begin weight-bearing.

Feb. 17, 1907. Complains of discomfort over outer surface of knee. X-ray shows exostosis of tibia and femur. Re-entered hospital.

Feb. 18. Operation. Knee-joint opened over outer side. Cartilage and synovial membranes thickened and congested. When knee was flexed, condyles were exposed and presented a marked hypertrophic condition. Both ridges removed. Bone and cartilage soft. Wound closed.

Feb. 28. Discharged.

March 3. Patient wearing plaster cast. Slight swelling over outer surface of knee and some pain in right ankle-joint.

June 12, 1907. Considerable thickening about condyles.

Case 65. M. M., male, eighteen, single. Operation, Jan. 21, 1907.

Linear incision over outer surface of knee. Synovial membrane found injected and thickened. A portion of this was removed. Also one fringe 5 cm. by 1½ cm. and sent for pathological examination. Bone apparently normal according to x-ray and actual finding.

Jan. 26. Persistent pain in knee-joint.

Feb. 11. Septic stitch delayed healing of wound.

Feb. 13. No improvement in motion of joint. Pain very acute with attempted flexion.

Feb. 18. Under chloroform leg forcibly flexed to a right angle with hardly any resistance.

Feb. 21. Forcible flexion accompanied by extreme pain.

Feb. 25. Can flex almost to a right angle. Extension limited to within 10° of straight. Delayed pathological report. Tubercular synovitis.

Feb. 27. Leg put in plaster of Paris bandages. Tonic treatment to improve general condition. Discharged home.

Readmitted Oct. 2, 1907. Patient has been wearing plaster of Paris cast since Febuary. Knee swollen and very painful without cast.

Oct. 23. Excision performed. Bone somewhat osteoporotic.

Nov. 12. Convalescence uneventful. Discharged home.

Dec. 6, 1909. No symptoms for past two years. Excellent result.

Case 66. J. H. M., male, eighteen, single. Operation, Dec. 30, 1908.

Quadriceps pouch of right knee adherent but not markedly infiltrated. Numerous eroded areas were found over internal condyle of femur and corresponding upper surface of the tibia, with only a few small islands of cartilage remaining. Many of the erosions were deep. There was a distinct fibrous envelope isolating this region from the rest of the joint. When incised about 2 oz. of sero-sanguinotal fluid escaped. The outer trochanter of the femur and opposite surface of the tibia practically normal and very little extension of synovial disease in this direction. One crucial ligament was considerably disintegrated. On the posterior surface of the internal condyle a soft area of bone was found. This was curetted out to depth of ¾ inch. The semifluid substance expressed resembled pus, but may have been fat.

Jan. 13, 1909. Discharged home wearing cast.

Feb. 15. Wound entirely healed. Knee is in position of slight hyperextension. New cast applied.

March 29. Knee in good condition.

Dec. 1. Patient still wearing cast. Has had some pain when cast was split, but condition now is improved. To leave off cast gradually. Massage to thigh and calf.

Case 67. J. St. J., male, seventeen, single. Operation January, 1909.

No joint cartilage remaining. Considerable healed tubercular tissue removed. Wick put in either angle of wound and leg put up in plaster of Paris. There was considerable ooze from the wound for twelve hours following operation.

Feb. 8. Wick removed.

Feb. 15. Wound septic about inner angle when wick was removed.

Feb. 24. Septic infection readily yielded to treatment. Cast changed.

Feb. 26. Window cut over small granulating area. Slight discharge.

March 8. Discharged home. Leg in 15° permanent flexion.

Jan. 1, 1910. No exacerbation of disease and fair result as to position.

Case 68. V. R., male, thirty-seven, married. Operation, April 14, 1909.

Left knee-joint excised. Greater part of joint cavity contained healed tubercular tissue. One small focus in head of tibia; otherwise the bone not deeply involved.

April 16. Considerable ooze from joint for twelve hours following operation. No pain or other symptoms to note.

April 28. Renew cast.

May 3. Discharged.

Nov. 12, 1909. Still wearing cast. No subjective symptoms. Excellent result.

Case 69. U. B.

Both articular surfaces diseased, and there was considerable involvement of the soft parts. Two small foci found in femoral head. In tibial head was a focus which apparently penetrated bone to soft parts.

Dec. 23. No post-operative symptoms. Patient discharged wearing plaster cast.

*(To be continued.)*

## Clinical Department.

### THE EXTREME BLOOD PICTURE IN A CASE OF PERNICIOUS ANEMIA.

BY W. C. SPEIDEL, A.B., M.D.,

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The following case is deemed worthy of report on account of the remarkable degree of oligocythemia presenting, the red blood cell count, dropping to 100,000 per cubic millimeter two hours before death, being the lowest count yet reported. The hemoglobin at that time as nearly as could be calculated was 9% (Sahli).

In the literature on the subject of pernicious anemia, Cabot mentions two cases in which the count fell below 200,000, citing the celebrated case of Quincke, 1877, of 143,000, and referring to two other cases. Hills, 1898, reports 155,280; Naegeli, 1908, 138,000, reports the lowest up to that time. This indeed is noteworthy when one considers that in the extensive and voluminous amount that has been written on this subject, a count of 1,000,000 is frequent; so low as 500,000, uncommon; below that number, rare, and when it is called to our attention that a count of less

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than 200,000 is reported in but four cases, it becomes of exceeding interest to learn if possible what might cause or bring about such extreme poverty of the blood. If unexplainable upon the basis of the facts in the case, it is of speculative interest, to say the least.

Before introducing the case it might be well to make in brief a few remarks in regard to the pathogenesis of the condition. The researches of Bunting, who produced experimentally in animals a gradually long-standing hemolysis by the injection of small doses of ricin, proved that a typical megaloblastic metamorphosis of the bone narrow can thus be produced, a metamorphosis identical with that seen in pernicious anemia. With larger doses of this or other hemolytic agents we get, as after experimental exsanguination, a red marrow, whose color is due not to megaloblasts, but to normoblasts and normal red cells. Bunting suggests the interesting hypothesis that in pernicious anemia we are dealing with a hemolytic process produced by a poison which exerts its action over a considerable time; that in an attempt to repair the damage done by this poison, the peripheral layers of the germinal erythrogenetic centers are first "peeled off" as in ordinary secondary anemia. Then, as the new formed erythrocytes are rapidly discharged into the blood with the continuation of the hemolytic process and the prolonged stimulation and acceleration of the blood-forming activities, the germ centers where the large immature red corpuscles lie become enlarged, over-active and finally crowd out all the other tissues of the marrow, so that immature red cells, often nucleated and of the large type characteristic of the erythrogenetic centers, are discharged into the blood in an unsuccessful attempt to make up for the losses due to hemolysis.

Cabot further says that if, as in cases of anemia due to the fish tapeworm, we can remove the source of blood destruction, the marrow returns to its normal condition, functions in the normal way and the patient recovers. If, on the other hand, as in cryptogenetic anemia, the hemolytic agent cannot be found or removed, the marrow grows more and more bankrupt.

William Hunter holds that the hemolysis which is now generally considered responsible for the disease is of gastro-intestinal origin, citing as evidence an increase in amount of iron pigment normally deposited in the liver and, to a lesser extent, in the spleen. It has been shown, however, that when hemolytic agents are introduced through the blood stream itself, these iron deposits occur in the same way as in pernicious anemia of the ordinary type. It seems more likely, as is generally assumed, that the unknown poison of pernicious anemia stimulates and pathologically exaggerates the normal phagocytic and hemolytic activities of the spleen, lymph glands and marrow. The pigment in the phagocytic cells and stroma of these tissues fails to give the iron reaction. It is in the liver and kidneys that it is changed to hemosiderin, but the primary destructive agencies are in all probability in the hemopoietic organs themselves.

*History of case.* — Patient, R. G., male, forty years of age, nativity Ireland, has been in this country twenty-two years; is married.

Admitted to Cook County Hospital Feb. 8, 1910, on the service of Drs. Loeb and Mix.

*Present complaint.* — General weakness, some cough and vomiting. The onset was insidious and indefinite and is dated as beginning about one year ago with soft chancres, following which patient began to lose weight, noticing pallor and progressive weakness and shortness of breath, and "night sweats" were frequent. Several attacks of vomiting during that time; these attacks were unaccompanied by pain, bear no relation to eating. No hematemesis or blood in stool. Coughing has been persistent for the past five months, no hemoptysis, expectorates considerable greenish-yellow sputum.

*Previous diseases.* — Had muscular rheumatism one year ago, gonorrhoea eighteen years ago, for the past ten years has had urethral stricture, some difficulty in urination and has frequently had urethra dilated. Had a chancre fifteen years ago followed shortly by secondary eruptions. Has since had children who were strong and show no hereditary taint.

*Habits.* — Has been a "hard drinker" for years. Present occupation a motor-man, formerly a butcher.

*Family.* — Parents died of old age; two brothers and three sisters living. Wife is living and well. Has living children. There is no history of similar disease in the family.

*Physical examination.* — General: Shows a poorly nourished, pale, somewhat lemon-tinted, white male about forty years of age, of uncertain gait, good mentality, complaining of general weakness and some numbness of the extremities.

Regional. — Head and neck: Pupils unequal, left smaller than the right, react very sluggishly to both light and accommodation. Tongue is pale and flabby, as is mucous lining of mouth in general. Teeth are poor (pyorrhea alveolaris). Cervical glands are not enlarged.

Chest: Prominence of right clavicle. Lungs: Some râles and impaired resonance over upper right lobe; also roughened breathing in the same region. Heart shows normal area of dullness, no irregularity, a hemic murmur at the base; second sounds are unaccentuated. Abdomen: Spleen and kidneys are not palpable. Liver extends one finger's breadth below the costal margin and is not irregular or tender. No ascites or palpable tumor masses. Inguinal glands palpable but not enlarged. Rectal examination is negative. Genitalia and lower extremities are negative.

Nervous system: Left patellar reflex absent, right reduced. Babinski positive on both sides. No girdle sensation, no acute gastric or shooting pains and no bladder trouble except as could be accounted for by stricture of urethra. Muscle and joint sense gone. Rhomberg positive and gait is noticeably of stamping quality. Numbness and tingling sensation are complained of in the lower extremities.

Functional irritability and some inability to fix attention are present; insomnia has been bothersome at times. Memory is good.

*Subsequent history.* — The course of the disease from then until the end, thirty-two days after entering hospital, is with but a slight suggestion of remission, progressively downward, and of chief interest are the blood findings. Other points less noteworthy are merely to be mentioned in passing.

Feb. 10, two days after admission, blood examination shows: Hemoglobin, 36% (Sahli); red blood corpuscles, 1,566,000; white blood corpuscles, 4,800; color index, 1, plus.

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Feb. 25, hemoglobin, 19% (Sahli); red blood corpuscles, 680,000, showing a drop of over a half million in fifteen days; white blood corpuscles, 4,000; color index, 1, plus.

Differential white cell count (100 cells) show polymorphonuclear neutrophiles, 61%; lymphocytes (large and small), 32%; transitional, 2%; neutrophilic myelocytes, 3%; eosinophiles, 1%; basophiles, 1%.

During the differential count eight nucleated red cells were seen, four of which were normoblasts, and an equal number of megaloblasts were present. Marked chromatophilia and a tendency toward macrocytosis is noted. Poikilocytosis is not marked; no blood platelets found.

March 5, hemoglobin, 14% (Sahli); red blood corpuscles, 750,000; white blood corpuscles, 4,200; color index, $\frac{14}{15}$, slightly less than 1, showing if anything a slight degree of improvement in the blood condition over that noted a week previous. In a stained smear at this time one megaloblast only appeared in the field in one of three slides. Both poikilocytosis and polychromatophilia are marked. No normoblasts are found.

March 10, hemoglobin, 12% (Sahli); red blood corpuscles, 780,000; white blood corpuscles, 2,200; color index, $\frac{12}{15}$ approximately, is still less than 1. Here is noted only a small increase in the red cells. The white cells are notably diminished in number and the hemoglobin also on the decrease. Eight to twelve megaloblasts were found on a single slide and four to six normoblasts.

March 12, two hours before death, the final count shows the most interesting changes above mentioned, namely, (1) Hemoglobin, 9%. It is found that Tallquist and the Dare instruments do not register; however, using two volumes of blood where one is called for, with Sahli hemoglobinometer then registering 18%, dividing by 2 for correction, the above result obtains. The instrument is six months old and the acid hematin control has probably not deteriorated. It is possible that the hemoglobin content here is less than 9%, for it must be borne in mind that from deterioration, improper standardization and the age of the individual arise sources of error which must be taken into account before absolute calculation can be made. Webster reports an error of 25% arising from faulty standardization of Sahli's solution. However, a discrepancy in favor of a higher color count is tenable on the same grounds, though inapplicable here, I think. Naegeli mentions as the lower limits in extreme cases, 12, 10, 8, and even 7% hemoglobin.

(2) Red blood corpsucle, 100,000 per cmm. A free drop from the lobe of the ear was obtained with some difficulty owing to the remarkable degree of oligocythemia existing, necessitating a liberal stab. A second drop was taken, a new stab being made in order to obviate possibility of error and for a check and control, Hayem's solution, fresh and recently filtered and in the dilution of 1:100 being used, Thoma-Zeiss counting chamber counting 200 squares, in each case recounting each a second time to avoid possible inaccuracy. An even distribution was noted and microcytes were included in the counting. (Emerson has noted an error of 200,000 arising from overlooking this form of cell.)

(3) White blood Corpuscle, 2,400, an inconsiderable increase over that of the forty-eight hours preceding.

Differential white count of 100 cells at this time shows

| | Per cent. |
|---|---|
| Polymorphonuclear leucocytes, | 56 |
| Lymphocytes: | |
| Small, | 28 |
| Large, | 11 |
| Transitional, | 1 |
| Neutrophilic myelocytes, | 4 |
| Eosinophiles, | 0 |
| Basophiles, | 0 |

During the count ten normoblasts, twelve megaloblasts and five intermediates, including the latter with the megaloblasts, give a Von Noorden blood crisis, of megaloblastic type, of 170 per 1,000 leucocytes, — the arbitrary lower limit being taken as 50 per mille. It is here seen that myelocytes were thrown out into the blood at this time. In a crisis of this sort eosinophiles should rise; in looking over the slide none are found; a jump in the red count is usually concomitant or follows shortly. Such was not evident in the present case and serves to illustrate the variability within certain limits of the blood picture of pernicious anemia relative to this point. Emerson, reporting 89 cases, in 20 finds an increase in the number of red cells counted within forty-eight hours preagonal, occurring quite uniformily, making note of interest in the fact that the higher the count with the first symptoms, the higher it is at death. How, then, in the face of such evidence, is such extreme paucity of red cells to be explained, unless we assume that the hemolytic agent causing this destruction was especially and intensely toxic at this period of beginning dissolution or, on the other hand, that vasomotor paresis is paramount in producing a relative local anemia or ischemia, considerations which at best must be purely hypothetical?

Skelton-Barlow stain used throughout.

(4) Color index, 4.5. This is exceedingly high, though hyperchromemia, as we know, is one of the characteristics of the disease. The volume index in this case unfortunately was not taken, but through the kindness of Dr. Capps, who measured 100 cells, we found an average diameter of 8.1 microns (7.5 microns normal), which leaves some discrepancy as to the high color proportional to the size of the individual cell. Capps has shown and upholds the theory that the color index is never increased without corresponding or greater rise in volume index; that it is not due to an increased affinity of cell protoplasm for hemoglobin. And furthermore, this fact proven, it is quite unnecessary to assume a supersaturation of the cell with hemoglobin. Another source of error is suggested by Emerson, who says, "The high color index of pernicious anemia has perhaps with reason been attributed to the fact that microcytes are overlooked." As previously stated, such I think is not the case here. Here applies also what was mentioned under hemoglobin estimation above with regard to source of error relative to defective instrument and so forth.

(5) The drop is pale, watery appearance, showing fluidity especially, and the halo about the drop so often described and rarely found in other diseases according to Cabot. Absence of rouleau formation is noted, as is also delayed coagulation time.

Coma supervened before death, six hours.

*Diagnosis.* — An autopsy was refused. It is, therefore, impossible to determine anything definite as to actually existing pathology underlying; however, the clinical picture is such that the diagnosis of pernicious anemia seems justifiable on those grounds alone, fulfilling many if not all the requirements suggested by Billings, namely, "when we find a marked oligocythemia, with the presence of many poikilocytes, microcytes and macrocytes, with polychromatophilia, and a

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relatively high percentage of hemoglobin with normal or higher than normal color index, it affords a type of blood which is found in no other anemic state. If to this we add the presence of nucleated red cells, and especially of megaloblastic type of red cells and a few myelocytes, which together indicate degeneration of bone marrow, the diagnosis is reasonably certain without post-mortem examination.

As to type, it is of cryptogenetic origin, the idiopathic form called Addison's anemia by Hunter, in that it conforms fittingly to the negative findings, which were emphasized by Addison so early as 1855, namely, cases where there had been no previous loss of blood (in this case slight and occasional epistaxis is noted), no exhaust-diarrhea, no chlorosis, no purpura, no renal, no splenic, no miasmatic, glandular, strumous or malignant disease.

Ophthalmoscopic examination showed slight hemorrhage into left retina. Urine showed small amount of albumin and an occasional cast, no edema of the extremities or puffy eyelids. Repeated stomach, sputum, and examination of the stools showed neither malignancy, tubercle bacilli or animal parasites. Diminished acidity of stomach contents was noted. No evidence of hemorrhoids or other cause of secondary anemia except slight nose bleed.

The diagnosis of tabes dorsalis is hardly tenable, and, if entertained, must be so on the assumption of a superimposition. Clinical evidence of dorsal column involvement is insistent, sphincter disturbance is absent, as is also a history of crises of any sort, and, in the presence of additional lateral cord involvement, as evidenced by a double Babinski, speaks for a combined cord degeneration due in all probability to the common hemolytic agent which is responsible for the most damaging and terminally destructive changes in the blood.

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# Medical Progress.

## PROGRESS IN THE THEORY AND PRACTICE OF MEDICINE. GASTRIC AND DUODENAL ULCER.

BY FRANCIS W. PALFREY, M.D., BOSTON.

[Concluded from No. 16, p. 619.]

### DIAGNOSIS.

In diagnosis also the influence of surgical evidence has been of great importance. The writings of surgeons, notably those of Moynihan, of Mayo and his associates, of Deaver, of Codman, of Hall, and of a number of reporters from German clinics, presenting large series of cases where the diagnoses were tested by operative findings, have given a far firmer basis for clinical diagnosis than ever before existed. In the light of these findings many discussions have appeared of the significance and diagnostic value of symptoms, of signs and of clinical laboratory tests. As compared with similar discussions in recently previous years there is a notable tendency to lay greater stress upon clinical history and symptoms and to place less reliance upon the findings of the laboratory in the diagnosis of gastric and of duodenal ulcer. Particularly is this true in the case of articles upon duodenal ulcer which from its recent recognition as a common disorder has received the attention due to a new disease. Its symptomatology, in the practice of those who have had the most intimate experience with it, is described by Moynihan [1] as so definite that the history is in itself sufficient for practical diagnosis, rendering other diagnostic evidence superfluous. While this statement must be regarded as an exaggeration, it is undoubtedly true that clinicians at large do not sufficiently appreciate the significance of histories such as are given by the class of patients in whom duodenal ulcers are being demonstrated. A digest of a few of the more important discussions of the symptomatology of duodenal ulcer may, therefore, be profitable in attaching a new significance to a clinical picture which has frequently in the past been denied adequate attention.

Mayo [2] enumerates the symptoms of gastric and duodenal ulcer in common as follows: (1) Acidity — the regurgitation of acid food and of acid-burning contents from the stomach not containing food; this acid regurgitation from the fasting stomach he regards as almost pathognomonic of ulcer. (2) Pain — seldom absent; described as burning or deep boring in character, temporarily eased by food, but as the patient clearly recognizes, later aggravated in consequence of food taken. (3) Hemorrhage — not a frequent symptom, even occult blood in the stools being rare in comparison to its constant presence in cancer. The presence of blood in the stomach contents or stools must always be suspected of coming from other sources. Single large hemorrhages are more often due to other causes (e. g., cirrhosis) than to ulcer. (4) Vomiting — not frequent on account of the care exercised in eating. (5) Gas — a nearly constant symptom. The

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symptoms of chronic perforation and of obstruction are also described. The presence of tumor is mentioned as occasionally observed. The distinction between gastric and duodenal ulcer is usually possible, based upon the location of the pain to the left in gastric and to the right in duodenal ulcers, and upon the fact that in the latter its onset is delayed for several hours after eating.

Moynihan,[1] writing of duodenal ulcer, maintains that in recurrent attacks the diagnosis can be made with certainty upon history alone. He lays stress upon the long duration of cases at present seen, and of their remittent and recurrent course, upon the frequent complaint of pain occurring two hours or more after eating and continuing until the next meal, the so-called "hunger-pain," occurring in many instances at regular hours in the day or night, as at 4 P.M., or at 2 A.M. It is often preceded by burning or gnawing sensations, with some belching and bitter or sour regurgitation. The pain, if severe, may be relieved by pressure; in this case it may be due to a spasm of the pylorus such as is sometimes seen at operation. Appetite is usually good and vomiting is rare. Hemorrhage is regarded as a complication rather than as a symptom. Occult bleeding is regarded as of possible diagnostic value, but Moynihan has not made use of it, in confidence in the adequacy of diagnosis from symptomatology.

Deaver,[46] also dealing with duodenal ulcer, attaches chief importance to pain in relation to food. In gastric ulcer the pain may not be immediate, and may even occur in the fasting contents under the influence of hypersecretion, but its constant appearance after a regular and considerable interval after eating speaks for duodenal ulcer. There may be tenderness. The pain is increasd by acid and relieved by alkali, and if vomiting occurs, it gives relief. The periodicity of attacks is striking; Deaver believes that cessation of symptoms in the interval between attacks is not to be regarded as temporary healing, but merely subsidence of secondary inflammation.

Codman[3] emphasizes the probable frequent occurrence of non-classical unrecognized duodenal ulcer. He reports the finding by the Pathological Department of the Massachusetts General Hospital of 30 active duodenal ulcers in 2,390 successive autopsy cases dying from all causes, or over 1%. The failure of demonstration of scars of healed ulcers he explains by the probability which he establishes that healing occurs in ulcers of the duodenum without demonstrable macroscopic scar.

Thus all these authors, and others, agree in regarding the history as sufficient basis in itself for a provisional diagnosis, and with such confidence that they are willing in cases which do not yield readily to medical treatment to make this diagnosis the ground for exploratory laparotomy.

Hall,[47] and Graham,[48] from the Mayo clinic, have written in similar vein concerning gastric ulcer. In an analysis of 50 cases of gastric ulcer proved by operation, Hall reports the following occurrence of symptoms: Pain in 82%; sour stomach in 80%; tenderness in 70%; vomiting in 60%; rigidity in 60%; and hemorrhage in but 34%.

It is undoubtedly true, as these authors suggest, that many cases passed as hyperacidity and nervous dyspepsia are in reality cases of gastric or duodenal ulcer.

Of special tests and diagnostic methods there have been few publications that require description. Perhaps the most noteworthy of these is the procedure of Bönniger,[49] which, however, has not yet received confirmation by other authors. Bönniger tests the sensitiveness of the stomach by introducing in the morning after first washing with water, 100 to 200 ccm. of decinormal hydrochloric acid. In cases of ulcer there is immediate intense pain, which is at once relieved by the introduction of milk. If there is no such pain, Bönniger feels that ulcer can be excluded.

Grandauer[34] has written to emphasize the importance of hypersecretion. He has also attaches significance to microscopic stagnation,[50] tested by giving bismuth in the evening and examining for it the washings of the stomach after removal of a test breakfast given the following morning. Recovery of considerable amounts of bismuth, according to Grandauer, occurs only in ulcer and in severe catarrh; if catarrh can be excluded, then ulcer is present. Borgbjärg[51] also supports these conclusions, finding that microscopic stasis is strong evidence for organic stomach trouble — either ulcer, cancer or chronic gastritis; that hypersecretion alone is suggestive of ulcer; and that if stasis and hypersecretion are both present, the diagnosis of ulcer is practically certain.

Einhorn[52] has used an ingenious device by attaching a thread to a small receptacle called a "duodenal bucket" enclosed in a gelatine capsule which is swallowed by the patient and allowed to remain in position over night. In the morning it is withdrawn and in cases of duodenal ulcer a blood stain is said to be found on the thread at a distance from the teeth at which the ulcer is situated. For diagnosis of gastric ulcer a still more complicated procedure is described, — a silk-covered, inflatable balloon at the end of the stomach tube, to be inflated within the stomach, showing a stain on withdrawal opposite the ulcer Ewald,[4] however, reports unfavorably on the use of the duodenal bucket.

Radiographic methods have of late years made great advance in the study of a variety of abdominal conditions, but unfortunately they have failed to demonstrate their utility in the diagnosis of gastric ulcer except in its complications, — pyloric stenosis and hour-glass stomach. Gastroscopy also has been practiced to some extent, but has not yet reached a position of general utility.

Thus the clinical diagnosis of gastric and duodenal ulcer still rests largely upon the time-honored methods of anamnesis and physical examination; but with our added knowledge that gastric and duodenal ulcers are of more frequent occurrence than was formerly believed, their presence is to be recognized or at least suspected on grounds that have hitherto been supposed to warrant only

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the diagnosis of hyperacidity or of other disorders purely functional.

PROGNOSIS.

In the prognosis of gastric and duodenal ulcer there have been published no recent statistics of importance except in connection with special methods of treatment with which they will be mentioned later.

A notable fact, however, is the increasing importance attached to gastric ulcer in the etiology of gastric cancer. Rodman[53] has shown this tendency in citing the following opinions as to the percentage of gastric carcinomata which could be traced to previous ulcer; Sonnichsen in 1891, 14%; Klausa in 1900, 26%; Mayo in 1906, 54%; more recently Moynihan, 72%, and Sscapescho, 90%. Hayem,[54] in 94 anatomical specimens of cancer of the stomach, found evidence of pre-existing ulcer in 21. Wilson and MacCarty,[55] however, point out that in investigations based upon post-mortem specimens traces of pre-existing ulcer may be obliterated. In an important communication based upon 210 surgical specimens from the Mayo clinic, they report that of 149 cases of cancer, 109 had definitely developed upon a preceding ulcer, 7 had probably been preceded by ulcer, and but 33 showed no evidence of pre-existing ulcer. Of 52 specimens of ulcer, 5 showed appearances suggesting transition to carcinoma.

Jeannel[56] has collected 50 cases, 2 of which are original, where gastric ulcer has produced a gastrocutaneous fistula.

TREATMENT.

With advances in the symptomatology and diagnosis of gastric and duodenal ulcer, and with the great progress in their surgical treatment, new efforts have been made to improve the medical treatment. From 1878 until within the past few years the medical treatment has been based almost exclusively upon the principles of the Ziemsen-Leube method. The requirements of this method as reiterated in a recent article by Von Leube[57] are (1) absolute rest in bed from one to two weeks; (2) ¼ liter warm Carlsbad water in the morning on a fasting stomach; (3) hot applications to the epigastrium; (4) restricted diet according to Von Leube's tables,[58] preceded by a few days of absolute fasting with rectal feeding in cases of hemorrhage. Von Leube's diet is divided into four stages. The first, given for the first ten days, includes bouillon, Von Leube's meat solution, milk, and raw and soft-boiled eggs. The second stage diet includes boiled calves' brain, thymus and chicken, gruels and mushes. The third gives, in addition, scraped raw or cooked beef and raw ham. The fourth includes roast meats, boiled fish and macaroni, bouillon with rice and chopped young spinach. A small amount of wine is given before meals. Most vegetables, salads, preserves and fruits are long avoided.

This treatment, however, in its application by other physicians, has been only loosely adhered to. The importance of rest in bed has not been fully realized, and, in the face of objections on the part of the patient, has often not been insisted upon. The use of Carlsbad water, emphasized especially by Ziemsen, has been generally omitted. The use of external applications has not been universal. The diet has been widely varied. The rectal feeding is the part of the treatment which has most often been regarded as the essential measure. This has been very generally employed in cases even without hemorrhage and has often been continued for periods much longer than Von Leube's directions have advised, and undoubtedly by the undue prolongation of this period of scarcely modified starvation much harm has been done. The articles of Von Leube's diet-list have been criticised both upon theoretical and upon practical grounds. A certain proportion of patients do not do well on this diet. The food value of some of its constituents, notably the bouillon, is low, and, according to Pawlow's findings, meat extract and wine are active stimulants to gastric secretion, which is, at least in those cases of gastric ulcer that tend to hyperacidity, distinctly undesirable. Thus most physicians have digressed from Von Leube's diet to a greater or less extent, according to their own experience, and articles upon the diet in gastric ulcer have varied widely in their recommendations.

In recent years much discussion has been aroused by a method of treatment devised by Lenhartz[59] and used by him for eight years with results published at the Congress für Innere Medizin in 1909. This treatment differs from that of Von Leube in several ways. While the value of bodily rest is strongly insisted upon, as in the Von Leube treatment, the withholding of food even in cases with hemorrhage is not recommended. Lenhartz believed that more could be accomplished in the way of sparing the stomach by giving frequent feedings of proteid substances to combine with the acid of the gastric juice than by leaving the stomach completely empty. He further believed that improving the state of bodily nutrition and correcting any anemia that might be present was essential to the healing of the gastric ulcer. He, therefore, advised rest in bed for a period of three or four weeks, with ice-bag to epigastrium and bismuth in the morning until cessation of hemorrhage. He gave a diet, even in cases which had had hemorrhage within an hour or two before the institution of treatment, of hourly feedings, rich in albumin, the total of which for each day was planned according to the following schedule. On the first day 2 stirred raw eggs and 200 ccm. of milk, iced, were given, increasing on each of the following days by 1 egg and 100 ccm. of milk until 8 eggs and 1,000 ccm. of milk per day were taken. Sugar 20 gr. was added to the egg on the third day, increasing 10 gr. every second day up to 50 gr. per day. Scraped raw beef 35 gr. was given on the sixth day and the same amount twice on succeeding days. Rice, boiled in milk, 100 gr., was given on the sixth day, increasing 100 gr. every second day up to 300 gr. Zwieback 20 gr. was included on the eighth day, gradually increasing to 80 gr. Raw ham 50 gr. and fresh butter 20 to 40 gr. were given on and

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after the tenth day. After the fourteenth day the eggs were reduced to 2, the fluid continued at 1,000 ccm. and the diet continued at 3,000 calories a day, including, in addition to the articles previously allowed, thick soups, roast and boiled meat, mashed potato and certain other vegetables. The bowels were not stimulated to act, but were allowed to remain without movement for ten days or more unless distention occurred, in which case a low enema was given. Contrary to the common teaching that iron is harmful in gastric ulcer, iron was given in the form of a specially prepared pill of soft consistency.

Lenhartz' report includes 295 cases, — 262 with recent hemorrhage and the remaining 33 with more or less blood in the stools. Of these 295 cases, only 7 died, and of the last 120 cases, but one died. There were but 18 which had return hemorrhage after the treatment was begun. The pains ceased within a day or two and never required narcotics; throughout the treatment the patients were more comfortable than under the Von Leube treatment previously used; convalescence was more rapid, with earlier return to normal diet and to work with gain in weight.

Excellent as these results seem, Von Leube in his reply to Lenhartz at the Congress and in a subsequent article [57] has published statistics of his own treatment which are even more striking. Of 627 cases of gastric ulcer, he reports 90% cured, 8.5% improved, only 1% not improved, and mortality 0.3%. Of 80 cases with recent hemorrhage, 90% were cured, 6¼% improved, 1¼% not improved, with a mortality of 2½%; 7 cases among these 80 had recurrence of hemorrhage. Of 547 cases without hemorrhage, there was no mortality.

Thus, both of these methods in the hands of their authors have given results far better than have commonly been attained.

The Lenhartz diet has been given trial by a number of authors not only in Germany, but also in other countries of Europe and in America. The preliminary reports of Lenhartz' method, notably that published by his assistant, Wagner, [60] attracted attention which led to reports by other authors and much discussion. Wirsing [61] applied the treatment in 326 cases with highly favorable results. Minkowski [62] also obtained better results than he had previously done with the Von Leube method. He did not, however, accept Lenhartz' teaching that the treatment was begun with safety and with advantage immediately after a hemorrhage, but followed the older custom of withholding all food for a day or two after hematemesis. Senator [63] recognized the force both of Lenhartz' and of Minkowski's arguments and devised a compromise between the two by means of a diet to be more fully described later, which in his opinion could be given with greater safety than Lenhartz' immediately after hemorrhage, to be adhered to for a few days, after which treatment could be continued according to Lenhartz' directions. Haberman, [64] Lambert, [65] Brown, [66] Spriggs, [67] Crummer [68] and Craig [69] have written favorable preliminary reports in English and American journals. Zweig [70] has adopted a diet closely similar to Senator's modification of Lenhartz', but on account of losing two cases from hemorrhage regards the immediate feeding as dangerous and advises a brief period of rectal feeding chiefly to supply fluid. Mayerle [71] has used the Lenhartz treatment in 71 cases with good results, but without success equal to that of the author of the treatment. Gerhardt [72] early wrote in favor of the treatment, but the results of cases reported recently from his clinic by Lüdin, [73] compared with those of a series of earlier cases from the same clinic treated by the Von Leube method, shows a slight advantage in favor of the older treatment. Ewald [74] and Weintrand, [75] on the other hand, have opposed the Lenhartz method and have adhered to the Von Leube treatment.

In the discussion following Lenhartz' report and Von Leube's reply at the Congress in 1909,[59] Müller and Von Tabora expressed themselves unfavorable to Lenhartz' immediate feeding. Von Krehl, Gerhardt and Stintzing expressed favorable impressions from their experience with Lenhartz' method. Moritz recognized the Lenhartz treatment as of value, showing that the Von Leube treatment was not the only way of accomplisihng results, but expressed a preference for the Von Leube treatment as somewhat safer.

Thus the Lenhartz method has won for itself a place in the treatment of gastric ulcer. It is true that the objections to that part of it which deals with the giving of nourishment immediately after hemorrhage may have to be reconsidered on account of the occasional untoward results that have been reported. But at least it has called attention to the undesirability of the prolonged under-feeding practiced especially by physicians who have carried Von Leube's principles to an extreme not countenanced by Von Leube himself, by undue prolongation of the period of rectal feeding. Lenhartz' diet must not be taken as an invariable one, but undoubtedly, as Lambert [65] and others have recognized, is to be varied to some extent according to local habits of diet and to individual peculiarities of patients, yet such variation can be readily affected without in the least changing the application of underlying principles. It is true that the Lenhartz treatment has not been proved to be actually better than the Von Leube treatment, and it may be that combinations of the two such as Senator's and Zweig's may be better than either, but at least we are now provided with a choice of treatments. When one treatment fails, as either treatment must do in some cases, the other may be instituted in its place instead of resorting to untried expedients.

Senator [63] aims to avoid the possible mechanical irritation of milk curds and at the same time to secure combination of free acid and adequate nutrition immediately after hemorrhage by the use of gelatine and of cream and butter. He begins treatment with a warm 10% solution of gelatine, sweetened and flavored with lemon, a tablespoonful every hour or oftener, and by giving in the first twenty-four hours 30 gm. of fresh butter

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and ¼ liter of cream, the butter in frozen pellets, and the cream beaten, with or without freezing. The blood still remaining in the alimentary tract is supposed to furnish sufficient protein, but a small amount of albumin is sometimes given in addition. Later the butter may be partly replaced by olive oil or almond milk. While this diet is small in bulk, its acid-binding power and its caloric value are relatively high.

Articles describing treatment of gastric ulcer have also been written by Rosenfeld,[76] who emphasizes the value of fats, especially cream, and increases or diminishes the relative proportion of albumin or carbohydrate according as hyper-acidity or hypo-acidity is present; by Sternberg[77] with emphasis upon finely divided, mechanically non-irritating foods, the preparation of which he describes at length; by Linossier[78] and by Rochester,[79] who describe methods based upon the Von Leube method, and by Thomson.[80] Few writers upon medical treatment have attempted to distinguish between gastric and duodenal ulcer, and even those who have attempted the distinction have not modified their treatment when the ulcer is believed to be duodenal and not gastric.

A number of accessory measures in the treatment of gastric ulcer have been discussed, notable among which is the olive oil treatment, first advocated by Cohnheim in 1902. Difficulty has been encountered in prevailing patients to take the olive oil; on this account Senator,[63] Bloch[81] and others have substituted oil of sweet almonds or almond milk (a tablespoonful of powdered sweet almonds to a glass of hot water, emulsified, followed by peppermint, if necessary) or the following prescription of Bloch: ℞ Tinct. belladonnæ, ʒi; Olei amygdalæ dulcis, ℥i; Vitelli ovi uni, Aquæ ad ℥i. M. Ft. emulsio. Sig. One tablespoonful three times a day. Köhler[82] has given olive oil in gelatine capsules of 3 gm. each — six to ten a day. Rutimeyer[83] has reported striking results from the use of olive oil 100 ccm. every morning in 100 cases. Borbjaerg[84] has found the effect of this increased by the suspension in it of 10 gm. of bismuth.

The value of bismuth has long been recognized from its power of coating over the surface of an ulcer. But since nitrite poisoning has occurred in a few cases, attempts have been made to find a substitute. Meyerle[71] has used bismuth subcarbonate with satisfaction, also escalin, a preparation of finely divided aluminum devised by Klemperer, recommended also by Jacobson.[85]

Hort[86] in England and Katzenstein[7] and Fuld[87] in Germany have treated cases by means of horse sérum prepared to supply the theoretically deficient bodies which are supposed after Weinland[33] normally to combat gastrolysis and autodigestion of the stomach. The results of the former, however, are not conclusive, and those of Katzenstein and Fuld have not yet been formally reported; judgment upon this method must, therefore, be reserved.

To stimulate mucus secretion as a possible protection to the stomach, Kaufmann[39] has reported benefit from the use of silver nitrate, either ½ gr. doses internally or by lavage with 1:2,000 solution. Ewald[74] gives a dram of 1:1500 solution three times a day in certain cases. Surmont and Dubois[88] have shown that in animals bismuth has a marked effect in increasing mucus secretion.

To counteract hypersecretion Von Tabora[89] recommends the continued use of atropine, subcutaneously. Petri[90] has shown that solutions of hydrogen peroxide have a powerful effect in reducing acidity; he gives 1 to 3 ccm. internally in 200 to 300 ccm. of water in the morning or practices lavage with a ¼ to ½% solution.

Ewald[74] and Bourget[91] support the use of a gelatine solution containing ferric chloride, given either by mouth or by tube. Bourget also uses soft tablets prepared as follows: Gelatine, water and glycerine, āā 100 ccm., are dissolved with gentle heat; 50 ccm. liq. ferric chloride are added with stirring; the mixture is then allowed to cool and solidify in tablets of 1 ccm. each. Bourget's treatment consists of a diet of milk and zwieback or rice given at 8 A.M., 12 M. and 6 P.M.; two or three hours after each meal is given a ferric chloride gelatine tablet followed in half an hour by sodium bicarbonate solution.

The treatment of gastric hemorrhage is discussed by a number of authors. The hemorrhage in gastric ulcer, like other hemorrhage, tends to spontaneous cessation by reduction of blood pressure and by clotting of blood in the eroded vessel. In all but a small proportion of cases this process leads to a favorable outcome without treatment, but in certain cases where the bleeding is arterial and from a vessel of unusual size it is fatal in spite of all treatment; repeated or long-continued bleeding from smaller vessels may also lead to dangerous exsanguination. It is in these latter cases that treatment may make the difference between a favorable and an unfavorable result. The usual treatment of gastric or duodenal hemorrhage following Von Leube has been absolute bodily rest, an ice-bag to the epigastrium, morphia to quiet peristalsis and cessation of all mouth feeding. Hoover[6] has disputed the value of the ice-bag, Lenhartz has dispensed with morphia and Lenhartz and Senator have attempted immediate feeding as already described; yet rest, ice-bag, morphia and fasting are still made the basis of treatment by most clinicians. The use of old-fashioned styptics given by mouth has been abandoned except that of ferric chloride used with gelatine by Ewald,[74] or in solution for lavage in severe cases by Bourget.[91] Lavage with ice-water is advocated by Ewald,[74] but is regarded as unsafe by others. Weintrand[75] gives intravenously a 10% salt solution.

The use of adrenalin by mouth, 30 drops of 1:1,000 solution, has in recent years been advocated by Von Leube.[57] Müller[59] mentions cases where this has been of no avail, and Zweig[70] disputes its desirability on the ground that it may increase acidity, as it has been shown to do by Ynkawa.[92] Yet so many authors mention the adrenalin treatment with favor that it may be accepted as having won a place in the treatment of gastric hemorrhage.

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SURGICAL TREATMENT FROM THE MEDICAL POINT OF VIEW.

With the recent prominence of gastric surgery it is important for the physician to have a clear understanding of its present status, particularly as to what assistance the surgeon can offer in the treatment of cases of gastric and duodenal ulcer, simple or complicated, and with what risk and with what hope of benefit.

Since gastro-enterostomy is by far the commonest operation, certain considerations as to its method of action which have been illuminated by recent work deserve mention. Gastro-enterostomy was at first devised to relieve pyloric stenosis. Next it was applied to uncomplicated gastric and duodenal ulcer with the idea of relieving the ulcer to some extent of the constant contact with gastric juice, but especially in the earlier cases with uncertain success, leading in some instances to obstinate vomiting of bile, cachexia and death. This led Cannon and Blake [93] to institute experiments in animals to determine the action of gastro-enterostomy in the presence of a patent pylorus, with the startling result that the stoma was found to refuse to serve as an outlet so long as the pylorus remained open. These results of Cannon and Blake have been confirmed by work of Legett and Maury, [94] of Guibe [95] and of Rovsing. [95] But the increasing success of gastro-enterosotomy in man as a method of treatment of ulcers without stenosis in itself establishes a presumption that the phenomonon in animals cannot be entirely parallel to what occurs in human cases of gastro-enterostomy. Furthermore, that the new opening from stomach to jejunum in human beings upon whom gastro-enterostomy has been performed may functionate whether or not the pylorus is obstructed is shown by the work of Pers, [96] who collected forty patients upon whom he had performed gastro-enterostomy from a few months to six years previously and traced the emptying of their stomachs by x-ray after a bismuth meal. In 38 of these 40, the stomachs discharged through the stoma rather than through the pylorus, and in the remaining two the route of discharge was uncertain. In all of these cases the stomach was emptied more rapidly than normal. Only 17 of them had at operation shown organic strictures of the pylorus. Jonas,[95] Schmieden [95] and Gray [97] have observed the stoma functionating in man. Gray [97] calls attention to an important anatomical consideration emphasized by Cunningham, but not sufficiently recognized by surgeons, that the stomach is not a one-compartment organ, but is divided by a band of muscle fibers, the *sphincter aditus vestibuli*, into two parts, the saccular cardiac portion and the tubular pyloric portion of greater peristaltic activity. To perform its function satisfactorily the stoma must be situated in the pyloric portion. While it is generally so placed by the surgeon, sufficient care is not exercised to insure this. Mayo's rule, for instance, that the stoma should lie vertically below the cardiac orifice, does not sufficiently guard against a stoma being placed in the cardiac portion where it can have little effect. In gastro-enterostomy performed with proper placing of the stoma close to the pylorus, Gray has seen by x-ray the bismuth meal pass out through the stoma in preference to the pylorus even though the pylorus was patent.

Aside from motor considerations, changes in the chemistry of digestion following gastro-enterostomy, notably a diminution of acidity found by some authors, have been supposed to play a part in the healing of gastric ulcers. To this question little has been added to what is mentioned by Goodall and Joslin [98] in 1907, except the work of Schönheim [99] confirming the usual presence of bile and pancreatic juice and of diminished acidity in the stomach contents of patients after gastro-enterostomy.

But whatever the cause of benefit after gastro-enterostomy in cases of gastric and duodenal ulcer, the statistics of surgical treatment leave no doubt that such benefit does occur. Statistics of different surgeons vary widely — between those of the Mayos,[2] who report, from 234 traced cases of gastric and duodenal ulcer, 80% cured, 9% improved, 4% not improved and the remainder dead, but only in 2 cases from causes connected with the stomach, and from 106 cases of duodenal ulcer, 82% cured, 9.5% improved, 5.7% not improved and a mortality of 2.8%, and those collected by Bettman and White [100] (150 cases) in which there was an operative mortality of 10%; 12% died in the first year and 14.6% died within five years after operations; 60% were cured or much improved and the remainder not improved. From a general survey of the literature [101] the impression obtained as to what can be expected from the present surgical treatment of gastric and duodenal ulcer may be roughly stated as follows: Approximately 60% of cures, improvement in half of the remaining cases and a mortality of 5%. As shown by the writings of Moynihan and of a number of other English surgeons, the treatment of duodenal ulcer by gastro-enterostomy has been considerably more successful than that of gastric ulcer; also gastric ulcers have been more successfully treated where they were situated at or near the pylorus. When it is remembered that the great majority of cases treated surgically are of a class which cannot be compared with those cases from which the medical statistics are compiled, but rather belong to the class of failures of medical treatment, even the less favorable of these surgical statistics show benefit from resort to surgery.

Operations other than simple gastro-enterostomy have been practiced by some surgeons, by ligation of vessels, or infolding and suturing of the base of the ulcer to guard against perforation and occlusion of the pylorus. These procedures appear not to increase the danger of the operation and may be of benefit.

Many surgeons, notably Rodman [53] and Payr,[102] counsel the resort to resection on the least suspicion that the ulcer may become malignant. The value of resection of suspicious cases is emphasized by the results of Kocher,[103] who reports 140

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cases of resection for cancer with 30 permanent cures. But it must also be remembered that resection hitherto has greatly increased the mortality.* Thus the statement of Payr [102] that even a family history of cancer should warrant resection cannot be accepted without question.

The indications for surgical interference have been much discussed, physicians advising operation with reluctance and surgeons advising exploratory laparotomy at an early period. But as Mayo [2] has said, there need by no such dispute; that only cases that have failed to yield to a reasonable amount of medical treatment should be considered surgically. This is an excellent statement, correcting alike those physicians who have held that gastric and duodenal ulcer become surgical diseases only for their complications, and those surgeons who have advised premature operation.

The view expressed chiefly by English surgeons that duodenal ulcer should be treated surgically as soon as the diagnosis is made, since they believe that duodenal ulcers do not heal under medical treatment, must be questioned in the light of Codman's [3] findings. That healed duodenal ulcer is not found at autopsy may be due to the fact that duodenal ulcers heal without visible scar.

The surgical treatment of complications of gastric and duodenal ulcer is sufficiently well recognized and require but passing mention in a medical discussion. The treatment of recurrent hemorrhage has been advanced by increased knowledge of the situation of ulcers, and by the procedures of Rovsing [104] of illumination and instrumental inspection of the interior of the stomach at operation. That pyloric obstruction demands operation is no longer disputed.

The results obtained in gastric and duodenal perforation have been noteworthy. These perforations high in the gastro-intestinal tract cause peritonitis of a type which when promptly treated is frequently cured. The surgical results of perforation stated by Deaver,[105] of 50% recoveries in all cases and of 75% recoveries where operation was performed within twelve hours, emphasize the physician's responsibility for prompt diagnosis and surgical interference.

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# Reports of Societies.

## AMERICAN SURGICAL ASSOCIATION.

### Meeting at Washington, D. C., May 3, 4, 5, 1910.

[Concluded from No. 16, p. 623.]

DISCUSSION.

Dr. Arthur Dean Bevan, of Chicago: There is a point of technic I wish to emphasize after an experience with some 20 cases in which the Kraske operation was performed. That is, during the Kraske operation we do not employ a single ligature, but simply as we come to the tissues on the sides of the incision freeing the rectum, massive 10-inch or 12-inch clamps are put on the tissues, for instance, high up on the levator ani muscles and on the inferior hemorrhoidal vessels which supply the rectum and the lower part of the sigmoid. With the employment of these clamps there is less risk of hemorrhage and a greater saving of time than if an attempt is made at ligation.

Dr. Joseph C. Bloodgood, of Baltimore: One of my first cases, operated on about six years ago, was such that we were able to save three inches of the anus and rectum, making a suture of the sigmoid which was brought down, and this patient has not only been as well as before, but has perfect function.

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Dr. Alexander H. Ferguson, of Chicago: In some of these cases I have resorted to the combined operation in two stages to advantage. Open the abdomen, take the proximal end of the bowel, make an artificial anus, invert the distal end into the rectum — that would be one operation; then, when the patient is in good condition, remove the rectum from below, the bowel being already inverted giving ready access to the mass. By the use of clamps without ligatures the operation can be done in a few minutes.

Dr. Joseph A. Blake, of New York: I have had more experience with the combined operation than with any other; I have done twelve consecutive operations in that way without any mortality. The mortality is less if a permanent colostomy is done; it avoids infection and the operative field is kept comparatively clean, and it also affords the opportunity of removing the whole growth at the lower part of the bowel. This procedure should be confined to those cases at the middle of the rectum or above, and those in which the anal sphincter is involved and has to be removed.

Dr. G. E. Armstrong, of Montreal: In the low cases where the sphincter has been involved I have sometimes succeeded in getting a satisfactory sphincter by bringing the upper ends down through the lower fibers of the gluteus maximus. One such case operated upon ten years ago now has perfect control.

Dr. William J. Mayo, of Rochester, Minn. (in closing): We have some very satisfactory cases of union between the sigmoid and lower portion of the rectum, and the rule has been, when made from above it has been all right, but when made through the posterior incision, or through the vagina, there is ulcer and fistula. In regard to permanent colostomy, I have often regretted not employing this procedure, because some of our deaths have been due to infection.

I wish to emphasize the point that it is practically impossible to make honest percentages of cases such as these, for the reason that if all cases which cannot be traced are counted as dead, the mortality rate would mount up. This is the only way, however, to consider such cases of which we have no absolute record, and proves the inaccuracy of any percentages which we may try to strike.

### CHORIOCARCINOMA. REPORT OF A CASE OCCURRING IN A PATIENT WITH AN INFANTILE UTERUS.

A. Primrose, M.D., C.M., M.R.C.S. Eng., Toronto, Canada: Tumors variously described in individual instances as chorio-epithelioma, deciduoma malignum, synctioma maligna, etc., have hitherto been considered as overgrowths of chorionic villi which invade the blood sinuses of the uterine wall, and then, rapidly disseminating, present the clinical picture of great malignancy.

A neoplastic growth of this character may occur after normal pregnancy. In addition, however, it may follow miscarriage or it may make its appearance after the removal of a vesicular mole. In cases of ectopic gestation the tumor elements have been demonstrated in the gestation sac. In 1903, Teacher published the results of an exhaustive study of chorio-epitheliomata, and his views have generally been accepted that they arise in connection with pregnancy and originate from the chorionic epithelium which is of fetal epiblastic origin.

The tumor removed presented the characteristic elements of a choriocarcinoma with a very large proportion of Langhan's cells showing metaplasia and mitosis. A few isolated masses of the syncytium were also present.

These tumors may exhibit an histological structure in which fully formed villi may be present or the cellular elements of that structure in varying proportion. Secondary growths are common in the vagina or in the lungs, but occasionally metastases occur in the liver, kidney and other organs. There is a relationship between pathological processes resulting in a neoplasm and physiological activity because the invasion of the maternal uterine tissues by the villi occurs as a normal process in pregnancy. Increased activity in this direction may lead to malignant infiltration and tumor formation. A further fact of interest is that in normal pregnancy normal chorionic elements are carried to the lungs and lodged in the pulmonary capillaries and there undergo absorption.

The clinical course of chorioma presents great variation. The primary growth may disappear spontaneously and this may occur whilst secondary metastases continue and produce a fatal issue. Hemorrhage, pain, anemia and extreme emaciation are frequent symptoms, and where metastases occur in the lungs, then we have cough and hemoptysis.

Ewing's classification is the most valuable guide for prognosis and treatment.

Chorio-adenoma in which the structure of the villus with its normal histological arrangement is reproduced.

Choriocarcinoma in which Langhan's cells are chiefly in evidence and where marked mitosis is observed.

Syncytial endometritis where the maternal tissues are invaded with wandering cells derived from the syncytium.

Syncytioma where transitional types are in evidence.

Of these, the choriocarcinoma is extremely malignant and is probably invariably fatal. The other forms present great variation in their degree of malignancy and may even disappear spontaneously or after partial removal.

Where spontaneous disappearance does occur, Teacher has shown that the process is brought about by fibrosis and encapsulation.

### PROGNOSIS AND OPERATIVE TREATMENT OF FRACTURE OF THE BASE OF THE SKULL.

Joseph Ransohoff, M.D., of Cincinnati, Ohio: The paper was based on an analysis of 190 cases occurring during the last ten years in the Cincinnati Hospital. One hundred and twenty-four of the cases were fatal. The prognosis is influenced by the depth of the coma chiefly, and even in greater degree by the fixed condition of the pupils. Of 42 patients with non-reacting pupils, 41 died. In five years there were 19 operations, trephining or decompressive, with 7 recoveries. The conclusions of the paper were as follows:

I. There will always be a large mortality connected with basal fractures; death resulting from primary shock, brain laceration or hemorrhage. Thirty-seven per cent of the fatal cases die within six hours or less, and 56% die within twelve hours. It is not probable that the mortality of this class of cases can ever be reduced with or without operation. They are primarily fatal.

II. Twenty-three per cent of the fatal cases die during the second twelve hours of the first day; and 6% die during the second day. They are the cases in which the coma is not profound; in which the pupils are not fixed; in which the breathing is not stertorous and in which there is not complete muscular relaxation. With a slow, full pulse and lumbar puncture indicating hemorrhage and increase of intracranial pressure, a trephining operation is indicated. In the doubtful cases an operation is indicated.

III. In this class of cases, where facilities for the major operation of trephining are not at hand, repeated lumbar puncture should be essayed. This procedure

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may be destined to take the place of decompressive operations.

IV. There is a large group of cases in which there is complete consciousness or in which there is a somnolence or milder degree of coma, and in whom the concomitant symptoms do not indicate a grave intracranial trauma either to the brain or its vessels. The pupils though uneven react; involvement of one or more cranial nerves may be evident. The symptoms singly or collectively are not ominous at any time. Eighty per cent of this class of cases have a tendency to get well with or without operation. They should not be operated on unless the symptoms indicate an increase of intracranial pressure from hemorrhage, beginning cerebral edema or distinct localizing (cortical) symptoms.

V. There is a distinct class of cases in which operation is indicated. They are cases which seemingly not severe in the beginning grow progressively or suddenly worse, showing signs of increased intracranial pressure. Decompressive operations may save a considerable proportion of them.

VI. It has yet to be determined where the trephining should be done to obtain the best results. Since most fractures involve the anterior or the middle fossa, subtemporal trephining is doubtless the procedure oftenest indicated. When, however, an hematoma in the mastoid or occipital region indicates an involvement of the posterior fossa, the operation should be subtentorial. To relieve the subtentorial tension by an opening made in the temporal region is illogical and may be dangerous. I attempted it recently in a cerebellar tumor, the site of which could not be determined. The patient succumbed within two weeks with symptoms of bulbar paralysis.

DISCUSSION.

Dr. Frank E. Bunts, of Cleveland: In an ordinary case of fracture of the base of the skull in which the blood pressure can be obtained, a beginning choked disk and edema and hemorrhage in the brain detected, the decompression operation should be performed, and in many such cases we may expect altogether beneficial results.

Dr. Joseph C. Bloodgood, of Baltimore: Up to the present time I have been unable to find any case of epilepsy following an injury to the skull in which some piece of the skull was removed, either by operation or by the injury itself. This would rather substantiate the view that epilepsy is more apt to be started up by changes in pressure than by actual injury.

Dr. G. E. Armstrong, of Montreal: If in these cases the pressure is subtentorial, as indicated by the respiration, aspiration of the cerebrospinal canal may prove very injurious.

Regarding Dr. Bloodgood's remarks, I would like to report two instances where epilepsy has followed in the presence of considerable defect in the skull; one following the kick of a horse in a young man, where there was rupture of membrane, loss of brain tissue with considerable defect in the skull remaining, and epilepsy beginning a couple of years later; the other, in a man injured in the frontal region, in which there is a considerable defect in the skull, and epilepsy has followed.

A METHOD OF OVERCOMING THE SHORTENING IN OLD FRACTURES TREATED BY THE OPEN METHOD.

Edward Martin, M.D., of Philadelphia, Pa.: It was because of the complete futility of any method of traction which could be applied to the leg and feet in the case of an ununited fracture of the femur with 2½ inches of shortening that the present method of overcoming the shortening was devised. It consists in a long strong canvas strip pocketed in the middle and looped at the ends. The bones at the seat of fracture are freed, the pocket is slipped over the proximal end of the distal fragment, the ends of the canvas strip are carried in the long axis of the limb, and in the loops is fixed a cord to which are attached the weights. By thumb pressure the bone is kept from angling out of the wound, and weights up to 100 lb., or even more, are attached to the rope. In from three to five minutes the shortening is overcome. Only those structures which interfere with proper placement are stretched, and this is done so thoroughly that there is but slight tendency to the reproduction of deformity.

DISCUSSION.

Dr. Richard H. Harte, of Philadelphia: In regard to extension, I consider a pulley similar to that used on boats, a double and single pulley, to be the best type to use. These should not be close together, but enough line between them to allow of manipulation of the limb by the operator. After a thorough incision has been made and the ends of the bone exposed, you can disengage the bands of tissue by the employment of steel elevators. It is important to do as little damage as possible to the tissues. I do not consider silver plates strong enough to hold the bones in position and, therefore, would always advise the use of a heavy steel plate such as that suggested by Lane.

Dr. Albert J. Ochsner, of Chicago: I would like to describe a method which we use almost entirely. It consists in the slow stretching of the muscles instead of the rapid stretching, and the only thing that is peculiar about the method is the application of rubber adhesive strips to as high a point above the seat of fracture as is possible. For instance, instead of applying the rubber adhesive up to the fracture, it should be applied over the entire length of the thigh; then, with no more than 24 lb. of weight, we have, in every fracture where there has not been a union, been able to stretch the muscles sufficiently to replace the fractures without making a resection of the ends. In cases where there is a union in malposition, the muscles will stretch to a marked extent. It is important to use two Lane plates, with two screws at each end in order to keep the bones from slipping.

Dr. James E. Thompson, of Galveston: I think the important point is that it is not the contraction of the muscles which prevents reduction, it is hemorrhage, and after this blood clot has been evacuated, the bones can be held in proper position.

Dr. Harry M. Sherman, of San Francisco: The method of extension described by Dr. Harte I do not consider as good as where two hanks of yarn are applied as perineal straps, the weight coming on the tuberosity of the ischium. On the foot is put another hank of yarn. The pulling upon the bones has been measured, and over 200 lb. of weight have been applied in some cases without injury to the ligaments of the ankle or knee, and that is sufficient to pull out any tissue interfering with the approximation of the bones.

Dr. Edward Martin, of Philadelphia (in closing): The length of the screws used in adjusting these plates should be the thickness of the bone, should be threaded up to their heads, and to hold the plate in place it is required that they penetrate entirely through the bone and no more.

In cases of extension, we prefer to use the old-fashioned resin plaster, properly made, because the rubber plaster always excoriates the skin.

FRACTURE DISLOCATIONS OF THE OS INNOMINATUM.

Harry M. Sherman, M.D., of San Francisco, Cal.: The paper made the point that simple uncomplicated fractures of the pelvic bones was not of necessity a

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serious lesion, but that healing could be expected in an ordinary way, as after a fracture of a bone of an extremity; that the really serious lesion was the complication of injuries to the bladder, the intestines or the vascular system; that injuries to the bladder were more likely to occur when the fracture had been due to antero-posterior compressive force; that injuries to the urethra were more apt to occur when the fracture was due to transverse compressive force; that the present indications were to open at once the space of Retzius and make a reverse catheterization and perineal section with lateral incisions in the groin and perineum for drainage of all areolar planes. With this technic the mortality should be reduced to about 33% as against 60%.

DISCUSSION.

Dr. Arpad G. Gerster, of New York: I have in my experience a case of fracture of the female pelvis on the left side in which there was no injury of the urethra, although it was compressed to such an extent by a solid blood clot that retention followed and had to be relieved for fifteen or sixteen days by the use of the catheter. The woman recovered, there was no other injury present. Another case was one in which there was fatal hemorrhage following fracture of the pelvis. Post-mortem revealed extensive laceration of one of the common iliac arteries and subperitoneal hemorrhage.

ON MOMBURG'S METHOD OF ARTIFICIAL ANEMIA BY SUPRAPELVIC CONSTRICTION.

Arpad G. Gerster, M.D., of New York, N. Y.: In reporting a successful case of his own, the author presents the history and present status of the method of obtaining artificial anemia of the pelvis, its organs and of the lower extremities by the elastic constriction of the abdominal aorta. The procedure has been employed hitherto in Germany in more than 300 cases by a large number of surgeons, gynecologists and obstetricians, whose reports are in the main very favorable.

The method consists in the application of the Esmarch principle to the waist and to the abdominal aorta, which thus, by the superposition of from two to six turns of the elastic cord, is compressed against the lumbar spine. The apprehension that the necessary amount of constriction might damage the gut has not been justified by experience. The interruption of the aortic blood current is regularly followed by a marked rise of the blood pressure, and its restoration by a still more marked cardiac depression, which, in patients afflicted with arteriosclerosis, myocarditis or even well-compensated valvulous lesions, may attain alarming proportions. Hence, Momburg's method is not suitable in these cases. In healthy and young individuals, however, its use is free from danger.

By this procedure the surgery of injuries, tumors and of acute or chronic suppurative disorders of the pelvic skeleton and contents has been rendered infinitely more safe than ever before.

Gynecology also has readily appropriated the new procedure. Mackenroot has shown that the most radical forms of attacking carcinomata of the uterus have become safe and bloodless by its aid. Isolation of the ureters and the removal of the retroperitoneal lymphatics along with the diseased womb are thus done with the bloodless precision of a post-mortem dissection.

The method's greatest utility for life-saving, however, has been demonstrated in post-partum hemorrhage, where Momburg's constriction affords the advantage of an easy and prompt control of the loss of blood, a measure which on account of its simplicity is available to every practitioner, to the midwife and even to intelligent laymen. An additional advantage of the measure is that not only is the bleeding arrested by it, but an energetic and lasting contraction of the flaccid womb follows the artificial anemia.

DISCUSSION.

Dr. Joseph Ransohoff, of Cincinnati: I have seen this method pursued in one case, and in this no ill effects resulted from its employment.

Dr. Harry M. Sherman, of San Francisco: I would suggest that where this method is used there is the same vasomotor paralysis below the point of constriction as after the employment of the ordinary Esmarch bandage on the extremities, and that this may be a reason for returning the vessels to the circulation gradually, otherwise there might be hemorrhage into the arteries.

Dr. Rudolph Matas, of New Orleans: I have pursued some experiments among some students with this method, but found that a fair test of it could not be made unless the patient was anesthetized in order to gain complete relaxation. From our very imperfect experiments, however, it was shown that in all weak hearts you are liable to have prompt failure; instead of noting the usual increase in blood pressure, there will be a fall, and this we feel indicates an inability on the part of the heart to keep up. I would not advise the use of the Momburg constrictor in any patients suspected of having any cardiac irregularity, but believe it will prove of great benefit in producing artificial anemia in strong, robust individuals without being followed by any ill effects.

Dr. Arpad G. Gerster, of New York (in closing): I would especially emphasize the point that this constrictor is not indicated in cases in which there is any disturbance with the cardiac function. It has proven particularly valuable in post-partum hemorrhage in healthy individuals.

## Book Review.

*Symptomatic and Regional Therapeutics.* By George Howard Hoxie, A.M., M.D. With 58 illustrations in the text. New York and London: D. Appleton & Co. 1910.

As is stated in the preface, this volume contains "the material collected for the course in general therapeutics recommended by the Committee on Curriculum of the American Medical Association — a recommendation adopted also by the Curriculum Committee of the Association of American Medical Colleges." After an exposition of the principles and methods of general treatment of pain, fever, itching, insomnia, constipation, vomiting, hiccough, cough, asthma, shock, emaciation, obesity, convulsions and localized inflammations, there is presented a systematic consideration of the treatment of the principal diseases regionally grouped. The volume concludes with miscellaneous notes on remedies and a brief *materia medica* based on the United States Pharmacopeia, giving the properties, dosage and uses of one hundred and twenty-five common drugs. The book, which contains a great deal of valuable information, is well written, arranged and illustrated, and should be an exceedingly useful work of therapeutic reference for general practitioners.

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THE BOSTON

Medical and Surgical Journal.

THURSDAY, OCTOBER 27, 1910

*A Journal of Medicine, Surgery and Allied Sciences, published at Boston, weekly, by the undersigned.*

SUBSCRIPTION TERMS: *$5.00 per year, in advance, postage paid, for the United States, Canada and Mexico; $6.50 per year for all foreign countries belonging to the Postal Union.*

*All communications for the Editor, and all books for review, should be addressed to the Editor of the Boston Medical and Surgical Journal, 809 Paddock Building, 101 Tremont Street, Boston.*

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## MEDICAL ASPECTS OF LATE MARRIAGE.

IT has become the fashion nowadays to decry late marriages as involving not only disappointment to individuals, but detriment to the race. This attitude proceeds partly no doubt from the natural assumption that the sooner one enters the blessed state of matrimony, the happier he must be, and partly from certain so-called anti-race-suicide propaganda which have led us to believe that the earlier a family begins to raise its children, the more and the better will be the progeny. No doubt in some cases this is true. *A priori* it would seem that children born during the years of their parents' most exuberant physical vigor should have a better chance in the struggle for existence than those begotten after the years of decline have begun. Nevertheless, it is not certain that this is necessarily the fact. Certain forms of life, particularly some plants, put forth their greatest reproductive energies late in life. Moreover, even if it were true that the children of young parents have an advantage over others, it must be remembered that fitness for survival does not consist solely in physical efficiency, but in such a combination of physical, mental and moral qualities as shall best enable the individual to escape the dangers and adapt himself to the conditions of his environment.

Now in our day, and especially among the classes in which late marriages prevail, those conditions are highly complex and require, almost more than physical efficiency of the animal type, the higher qualifications which only civilization can produce. Such qualities may conceivably be more fully transmitted, because more fully attained, by parents beyond the first flush of youth. From this point of view late marriage becomes an actual process of natural selection, an inevitable stage in evolution.

One of the weightiest arguments against late marriage is that it protracts the period of celibate temptation, during which men are liable to commit indiscretions that may have the gravest effect for evil on succeeding generations. Those who survive this period unscathed, however, are thereby the better fitted for survival and the more likely to transmit to posterity the powers of inhibition which have raised man above the brutes.

It is unfortunately true that late marriages often mean small families, but this is not necessarily so, and if they mean also the development of a fitter type, the price is well paid and no greater than the sacrifices man has been compelled to make at every step of his ascent. In children born of older parents, too, there is sometimes observed a delay of maturity, which protracts for them the early years of educational acquisition and lessens the hardship of late marriage. People are accustomed in this world to value most the things they have to wait for, and the experience of our race has shown that everything which tends to raise ideals of marriage is for the ultimate good of the race, though it may seem to sacrifice the individual. Really it does not sacrifice the individual, except in outward and inconsiderable ways.

Unquestionably in our country the age at marriage is steadily rising, especially among the more educated classes. From a medical as well as a sociologic point of view, however, it does not seem that this need be regarded with alarm as an unmixed evil spelling ruin to the race. It is rather a natural evolutionary phenomenon, as much a part of our progress as our first step in the erect posture. No doubt there is a point beyond which late marriage becomes absolutely destructive and undesirable, but on this side of that point there is still a sufficient margin to permit the advantages which accrue from later marriage without sacrificing the higher happiness of the individual or the ultimate good of the race.

## CULTIVATION OF ANIMAL CELLS OUTSIDE THE BODY.

ATTENTION is called to the important experimental work, recently reported by Carrel and Burrows in the *Journal of the American Medical Association*, on the "cultivation of adult tissues and organs outside the body." The results of this research are not merely of scientific interest,

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but may offer possibilities of great practical value. If the cells of various human and animal tissues and organs can be successfully grown on culture media, after the fashion of micro-organisms, and transplanted into successive cultures, there will be available opportunities never before open for the study of cellular biology, for observing the physiology and habits of animal cells and investigating the very nature of the life process. Not only normal but pathologic cells may be so studied, and in particular those anarchistic cell-growths known as neoplasms. Moreover, it is conceivable that such cells, cultivated outside the body, might be available under certain conditions for retransplantation into the body of the original or of another host.

Much yet remains to be learned in all these subjects, but the observations of Carrel and Burrows seem, according to their promise at least, of great potential value, and a worthy contribution to contemporary medicine from the Institute of which the profession has such high hopes for the future.

## CERTIFIED MILK.

In a bulletin issued on Oct. 15, the Milk Commission of the Suffolk District Medical Society announces its certification of the following dairies: "The Warelands," Highland Lake, Mass.; Massachusetts Agricultural College, Amherst, Mass.; Cherry Hill Farm, Beverly, Mass.; Middlebrook Farm, Dover, N. H.; and Miles River Farm, Hamilton, Mass.

The problem of securing and maintaining reliable sources of pure milk supply will always be one of the greatest importance to any community. At a hearing before the State Cattle Bureau in Lowell, Mass., on Oct. 21, questions of milk inspection were discussed from the standpoint of the consumer, of the producer and of the physician. There is undoubtedly considerable dislike on the part of farmers to inspection by the State Board of Agriculture. Whether such inspection would be more satisfactory to all if placed in the hands of the State Board of Health is a proposition that has been suggested and has found many advocates. Such a system has been opposed on the ground that it gives undue authority to the medical profession, whose standards may perhaps be unreasonably high, but on the other hand it would give consumers a greater sense of security, would insure uniformity of inspection methods and would generalize the advantages of certified milk now enjoyed only in certain localities.

## HEALTH OF THE UNITED STATES ARMY.

The recently published annual report of the Surgeon-General at Washington indicates continued improvement in the health of troops in the United States army service. The total number of deaths in the army during the past fiscal year was 370, of which 228 were from disease and 142 from trauma. The admission rate for sickness, representing the number excused from duty for any ailment, was approximately 86.6%. This seems extraordinarily high, and is indeed higher than in other countries, but is lower than it has been in the United States in former years. The non-effective rate, which is the real measure of disability from injury and disease, was during the past year only 41.48 per thousand, as contrasted with 42.68, 46.17 and 49.79 for the three preceding years. It is interesting to note, in comparison, the statement recently published in England, that the non-effective rate of the British army in India has been reduced 50% in the past ten years.

The Surgeon-General's report contains the further important information that of 11,338 persons in the army who have thus far received antityphoid inoculation, only 3 have since had typhoid fever, and none of these has died. On the basis of these convincing figures it is recommended that this protective inoculation be made a routine compulsory procedure throughout the army.

## FURTHER CONDEMNATION OF OYSTER BEDS.

In the issue of the Journal for Oct. 6 we noted the recent condemnation, by the Rhode Island Board of Shellfish Commissioners, of "275 acres of oyster beds at Bristol, in that state, as unfit for use on account of pollution by sewage from the city." This action was in consequence of the question raised some time ago by Dr. Wiley, of the United States Public Health and Marine-Hospital Service, whether the growing of oysters in waters used for drainage does not violate the provisions of the pure food law. As a result the local commissioners have made a complete investigation of the waters of Narragansett Bay, which have been divided on the basis of bacterial cultures into three classes: good, doubtful and bad; and all beds of those of the latter class have been condemned. In addition to those condemned at Bristol, beds at Providence have also been condemned to the value of $30,000, and at Warren, beds valued at $50,000. This action should result in improving the quality of oysters on the

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market, and in making them safer for consumption as food. Nevertheless, even though protected by antityphoid inoculation, the cautious and discreet will probably for some time still "beware the mollusca," and refrain from the raw oyster as a dietetic luxury, unless they know where he was raised.

## CONTINUANCE OF THE BOSTON HOSPITAL SCHOOL.

In the issue of the Journal for Oct. 13 we commented editorially on the proposed discontinuance of the Boston Hospital School at Franklin Park. Protests against the closing of this school were made by many physicians and by the Boston Association for the Relief and Control of Tuberculosis. Last week a conference was held between the mayor, the Board of Trustees of the Boston Consumptives' Hospital, the Boston School Board and the Boston Board of Health, as a result of which it was announced that the Hospital School will be continued for the present. It was also recommended at this meeting that in every school building hereafter erected by the city there be provided an open-air room for tuberculous and pre-tuberculous children.

In commenting on this recommendation an editorial in one of our daily papers pertinently remarks that fresh air should not be limited to such rooms, but should be more liberally admitted to all schoolrooms. This suggestion might well be extended to many public and private buildings. The prophylaxis of tuberculosis is even better than the continuance of hospital schools for its cure.

## DENTISTS IN THE ARMY AND NAVY.

At the annual meeting of the Northeastern Dental Association, held in Boston last week, there was considerable discussion over the failure of the national government to afford proper recognition to dentists in the army and navy of the United States. At present, instead of ranking with officers of the line, they are classed with masons, mechanics and other contractors. For some years a committee of the National Dental Association has been endeavoring to secure at Washington the legislation necessary to modify these conditions and establish a satisfactory status for dentists.

Other subjects under discussion were the provision of free dental clinics and public dispensaries in large cities, and the teaching of dental and oral hygiene in the public schools. At the closing session, Dr. Henry A. Kelley, of Portland, Me., was elected president for the ensuing year; Dr. Frederic T. Murless, Jr., of Hartford, Conn., and Dr. Andrew J. Sawyer, of Manchester, N. H., vice-presidents; Dr. David Manson, of Burlington, Vt., treasurer; and Dr. Edgar O. Kinsman, of Cambridge, Mass., secretary.

## MEDICAL NOTES.

Annual Meeting of the American Medical Association. — The annual meeting in 1911 will be held at Los Angeles, June 27 to 30 inclusive.

Hospital Burned at Winnipeg. — On the night of Oct. 18 a building at Winnipeg, which was in temporary use as a scarlet-fever hospital, was destroyed by fire. Forty-four children, patients in the building, were all safely removed.

Some Death-Rates in 1909. — Mortality statistics for the year 1909 show that of American cities with a population of 100,000 or over, New Orleans, La., that year had the highest death-rate, 20.2 per 1,000. Fall River, Mass., stood second, with a rate of 19.1, and Washington, D. C., third, with a rate of 19.

Free Distribution of Tuberculin. — As an evidence of the extent to which cattle in this country are tested for tuberculosis by their owners, it is stated that during the past year 400,000 ampoules of tuberculin were distributed free by the Federal Bureau of Animal Industry to cattlemen for use in making this test.

Death of Prince Francis of Teck. — News from London reports the death on Oct. 22 of Prince Francis of Teck, brother to the present Queen Mary of England. Presumably his Royal Highness died of empyema, as he is said to have recently undergone two surgical operations after a long illness with pleurisy.

Nobel Medical Prize. — The Nobel medical prize has been awarded to Prof. Albrecht Kossel, of Heidelberg. Professor Kossel is in his fifty-eighth year. He is a native of Rostock and he studied medicine there and in Strassburg. He devoted himself from his graduation in 1881 to physiological chemistry. He has done much pioneer work in the artificial production of organic material.

American Association of Railway Surgeons. — The seventh annual convention of the

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American Association of Railway Surgeons, which was held last week at Chicago, was attended by about 400 members. Among the subjects discussed were the abolition of the common drinking cup, the ventilation of cars and the abatement of smoke and dust. A special committee of five was appointed to co-operate with state and municipal boards of health to secure better sanitary conditions in railroad cars and stations and along railroad rights of way.

The Cholera Situation. — There seems to have been little change in the cholera situation in Italy during the past week. From Oct. 17 to Oct. 23, 111 new cases of the disease were reported in that country, with 55 deaths. These figures, which show a slight increase over those of the previous week, probably under-represent the true incidence and mortality of the infection. Report from Brazil states that the steamer *Araguaya*, from Southampton and Lisbon, is now under quarantine at the port of Rio Janiero, owing to the occurrence of several deaths from cholera on board during the voyage. No further cases or suspected cases have been discovered on ships reaching the United States during the past week. Of the three actual cases of cholera detained at the Swinburne Island Hospital, one has died and two are now convalescent.

Alvarenga Prize of the College of Physicians of Philadelphia. — The College of Physicians of Philadelphia announces that the next award of the Alvarenga Prize, being the income for one year of the bequest of the late Senor Alvarenga, and amounting to about one hundred and eighty dollars, will be made on July 14, 1911, provided that an essay deemed by the Committee of Award to be worthy of the prize shall have been offered.

Essays intended for competition may be upon any subject in medicine, but cannot have been published. They must be typewritten and must be received by the secretary of the college on or before May 1, 1911.

The Alvarenga Prize for 1910 has been awarded to Dr. M. Katzenstein, of Berlin, Germany, for his essay entitled "The Formation of an Arterial Collateral Circulation in the Kidney."

Increased Supply of Radium. — In an editorial in the issue of the Journal for Oct. 20, we announced the special meeting of the Surgical Section of the Suffolk District Medical Society next Monday, Oct. 31, to be addressed by Dr. Wickham on the clinical use of radium. In a recent number we have also noted the enormous cost of radium. It is interesting in this connection to learn by report from London that a considerably increased yield of radium is now being obtained from the pitchblende mines of Cornwall. Pitchblende is an ore of uranium, from which radium is extracted by a special process devised by Sir William Ramsey. During the past month 55 cgm. of pure radium have been produced at the Trenwith mines near St. Ives, and it is expected to increase the output to a gram a month. This not only assures a continuous supply of radium, but will probably lead to some decrease in its cost.

Suit for Late Arrival in an Obstetric Case. — An interesting suit for $5,000 damages has recently been filed before the Supreme Court of the District of Columbia by a patient against her physician for failure to reach her in time to render the obstetric services for which he had been engaged. The plaintiff alleges that the physician absented himself from his office without leaving word where he could be found, as a result of which he did not receive her summons till three hours after it was sent, and in consequence reached her house after the baby was born. The plaintiff further avers that, owing to the physician's absence at this time, she sustained personal injury resulting in subsequent disability, on the ground of which the claim for damages is made.

The moral obligation of a physician to hold himself in readiness for an expected obstetric call is, of course, generally recognized. Whatever the merits of the present case, it will be important to learn to what extent he may be held legally responsible for failure to answer such a call with sufficient promptness, if the fault for that delay can be proved to be his own.

Electricity for Cataract and Seasickness. — One is sometimes led to wonder if there be any ailment of the flesh, from warts to apoplexy, which electricity has not been alleged to cure. It is unfortunate that an agent of known therapeutic value should be so woefully abused and paraded as an advertising snare. But the mysterious is always attractive, and many would rather be healed by the occult than by the rational. The two latest suggestions for the medical use of electricity are in the treatment of cataract and of seasickness.

Of course these are hardly to be taken seriously. It is not so surprising that electricity should seem to cure seasickness, in which the treatment

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is largely suggestion. That it should offer prospect of benefit in cataract seems so remote a possibility as to be hardly worth consideration as long as surgery offers such excellent relief. It is to be feared that it will hardly remove the opacity of the patient's eye better than that of the mind's eye in him who employs it.

### BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston.— For the week ending at noon, Oct. 25, 1910, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 50, scarlatina 19, typhoid fever 35, measles 17, smallpox 0, tuberculosis 68.

The death-rate of the reported deaths for the week ending Oct. 25, 1910, was 14.35.

Boston Mortality Statistics.—The total number of deaths reported to the Board of Health for the week ending Saturday, noon, Oct. 15, 1910, was 205, against 181 the corresponding week of last year, showing an increase of 24 deaths, and making the death-rate for the week, 15.94. Of this number 109 were males and 96 were females; 200 were white and 5 colored; 138 were born in the United States, 64 in foreign countries and 3 unknown; 51 were of American parentage, 126 of foreign parentage and 28 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 33 cases and 3 deaths; scarlatina, 9 cases and 0 deaths; typhoid fever, 30 cases and 2 deaths; measles, 4 cases and 0 deaths; tuberculosis, 42 cases and 22 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 25, whooping cough 2, heart disease 31, bronchitis 3. There were 16 deaths from violent causes. The number of children who died under one year was 50; the number under five years, 64. The number of persons who died over sixty years of age was 46. The deaths in public institutions were 83. Anterior poliomyelitis, 1 case and 1 death.

Of the above infectious diseases the following were non-residents: Consumption, 3 cases and 5 deaths. Scarlet fever, 1 case. Typhoid fever, 1 case.

Deducting deaths of non-residents, the total is 174 and the death-rate is then 13.53.

Massachusetts Medical Benevolent Society. — The annual meeting of the Massachusetts Medical Benevolent Society is to be held this afternoon, Oct. 27, at the Boston Medical Library.

Diphtheria at Worcester. — On Oct. 21 five cases of diphtheria in a single school were reported to the Board of Health at Worcester, Mass. Suitable precautions have been taken to prevent the spread of this minor outbreak.

Bequests to Medical Charities. — The will of the late Mary A. Puffer, of Lynn, Mass., filed for probate at Salem, Mass., last week, contains the following bequests to medical charitable institutions: To the Lynn Hospital, $5,000; to the Union Hospital of Lynn, $1,000 and one third of the residuary estate; to the New England Peabody Home for Crippled Children, Boston, $1,000; and to the Boston Floating Hospital, $1,000.

Violations of Milk Laws in Malden. — In the district court at Malden, Mass., a local dealer was last week fined $50 on each of two counts, the first for having in his possession for sale milk to which 12% of water had been added, the second for having in possession milk containing formaldehyde. Another dealer before the same court was fined $25 for offering for sale cream below the required standard. The occurrence of such violations shows the need of continued vigilance on the part of milk inspectors.

Hospital Concerts for November. — It is announced that during the month of November the concerts of the Hospital Music Fund will be given as follows: On Nov. 2, at the Soldiers' Home, Chelsea; on Nov. 6, at the Free Hospital for Women, Brookline; on Nov. 13, at the Somerville Hospital; on Nov. 20, at the House of the Good Samaritan, Brookline; on Nov. 24 (Thanksgiving Day), at the Massachusetts General Hospital; and on Nov. 27, at the Vincent Memorial Hospital, Roxbury.

### NEW YORK.

Diphtheria at Hamilton College. — An outbreak of diphtheria, stated to be rather mild in character, has occurred at Hamilton College, in Clinton, and as a result the forty students and one of the faculty with quarters in Emerson Hall have been placed under quarantine. Up to Oct. 7 twelve cases had been reported.

A Death from Cholera at Sea. — The steamship *Taormina*, from Naples and Genoa, which arrived at quarantine on Oct. 22, reported that on the 18th a woman steerage passenger had died at sea from cholera, after three days' illness, and by way of precaution Health Officer Doty had all the steerage passengers of the vessel transferred to Hoffman Island for observation.

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Endowment of Rockefeller Institute. — On the day that the new hospital of the Rockefeller Institute was opened it was announced that Mr. Rockefeller had added to the endowment of the institute $3,820,000 in securities having a par value of that amount. This makes the total income-bearing endowment $6,420,000, and the total amount of Mr. Rockefeller's gifts to the institute, including land and buildings and earlier gifts for medical research, $8,240,000. A formal statement issued on this occasion by the trustees is in part as follows: "The latest addition to the resources of the institute has also been made the occasion for an important development in the organization of the institution as a public trust. To-day for the first time the Board of Trustees contemplated by the charter has come into being, and has legally taken possession of all the property of the institute, thus establishing it perpetually as an independent foundation. The Board of Trustees is initially constituted as follows: John D. Rockefeller, Jr., Frederick T. Gates, William H. Welch, Starr J. Murphy and Simon Flexner. The function of this board is to hold and care for the property of the institute, including the investment of its endowment funds, and to hold the entire income at the disposal and under the full control of the Board of Scientific Directors, which is constituted as follows: Dr. William H. Welch, of Baltimore, president; Dr. T. Mitchell Prudden, of New York; Dr. L. Emmett Holt, of New York, secretary and treasurer; Dr. Christian A. Herter, of New York; Dr. Simon Flexner, of New York, director of laboratories; Dr. Hermann M. Biggs, of New York, and Dr. Theobald Smith, of Boston. The final establishment of the Rockefeller Institute, with its present generous endowment, is the culmination of a series of carefully considered gifts, each one based on a thorough demonstration of existing needs and on evidence of competent stewardship of funds previously intrusted. . . . The hospital, which will profit largely by the new income, is not to be regarded as a separate institution; it is merely a part of the working equipment for medical research controlled by the one board of directors. Being now intrusted with by far the largest sum of money available for medical research, and with a wonderfully generous and perfect equipment at their command, the directors have a high sense of their responsibility to the public for the careful discharge of their great trust." Some realization of the care bestowed upon construction and the perfection of detail in the hospital may be obtained from the fact that it is estimated that, according to the expense of erection and equipment, each of the seventy beds which form its complement cost the large amount of $16,000.

## Current Literature.

### Medical Record.

Oct. 15, 1910.

1. Taylor, H. L. *Practical Points in the Management of Poliomyelitis and Its Sequelæ.*
2. Craig, H. A. *Bacterial Vaccines in the Treatment of Diseases among the Aged.*
3. Buerger, L., and Kaliski, D. J. *Complement-Fixation Tests in Thrombo-angiitis Obliterans.*
4. Stoll, H. F. *The Relative Value of Symptoms, Physical Signs, Tuberculin and the X-Ray in the Diagnosis of Tuberculosis.*
5. *Wolbarst, A. L. *Personal Observations on the Ehrlich-Hata "606."*
6. Zigler, M. *Report of Three Cases Treated with Anti-gonococcus Serum.*
7. Abbe, T. *A Fracture of the Pubic Bone.*

5. Wolbarst gives some of his observations on the effect of Ehrlich's "606," and reports seven cases of his own. He concludes that, if not a complete specific, it is certainly the most potent remedy for syphilis yet produced. The primary lesion shows distinct evidences of healing within a few days. Secondary lesions disappear within two weeks. In many cases gummata that have resisted mercury and the iodides for years have disappeared in from three to six weeks and have not since recurred. [L. D. C.]

### The Journal of the American Medical Association.

Oct. 15, 1910.

1. Collins, J. *The Relationship of Neurology to Preventive Medicine.*
2. Shoemaker, G. E. *Papillary Cystadenoma of the Kidney, with Myoma of the Uterus and Spinal Caries.*
3. Welty, C. F. *Combined Forceps and Tonsillar Separator.*
4. Albert, H. *Diffuse Idiopathic Hypertrophy of the Mammary Glands of the Female.*
5. *Cabot, R. C. *A Study of Mistaken Diagnoses, Based on an Analysis of One Thousand Autopsies and a Comparison with Clinical Findings.*
6. Barker, L. F., Hirschfelder, A. D., and Bond, G. S. *The Electrocardiogram in Clinical Diagnosis.*
7. Van Dersha, J. W. *Rachitis.*
8. Gant, S. G. *Etiology, Diagnosis and Treatment of Colonic, Sigmoidal, Rectal and Anal Affections in Infants and Children under Twelve Years of Age.*
9. Goffe, J. R. *Tuberculosis of the Female Organs of Generation and the Peritoneum.*
10. Wilbert, M. I. *A Forecast of the United States Pharmacopea IX.*
11. Hirschman, L. J. *A Simple Bloodless Operation for Hemorrhoids.*
12. Rosenberry, B. P. *A Case of Pernicious Anemia.*
13. Carroll, A. H. *Adiposis Dolorosa (Dercum's Disease) in Mother and Daughter.*
14. *Hirshberg, L. K. *Anaphylactin. A Preliminary Note.*
15. Eisendrath, D. N., and Strauss, D. C. *Surgical Importance of Accessory Renal Arteries.*
16. Dolly, G. C. *Gangrene of the Lung with Trichomonas as the Only Apparent Etiologic Factor.*
17. Litterer, W. *The Non-Oviparous Female Hookworm.*
18. Carrel, A., and Burrows, M. T. *Cultivation of Adult Tissues and Organs outside of the Body.*

5. Cabot, in an analysis of 1,000 autopsies and clinical findings, studies mistakes in diagnoses. In brief, he

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found correct diagnoses made in aortic stenosis, in 61% of the cases; in aortic regurgitation, in 84%; in chronic myocarditis, in 22%; in arteriosclerosis, in 60%; in thoracic aneurysm, in 50%; in cardiac hypertrophy and dilatation, in 66%; acute and ulcerative endocarditis, 39%; acute pericarditis, 20%; lobar pneumonia, 74%; bronchopneumonia, 33%; phthisis, 59%; miliary tuberculosis, 52%; acute nephritis, 16%; chronic glomerular nephritis, 74%; chronic interstitial nephritis, 50%; cerebral hemorrhage, 67%; cerebral tumor, 72⅓%; septic meningitis, 64%; tuberculous meningitis, 72%; gastric cancer, 72%; peptic ulcer, 36%; hepatic cirrhosis, 61%; typhoid fever, 92%; diabetes mellitus, 95%. He draws the following conclusions from his analyses: (1) Never make a diagnosis of uremia in a patient seen for the first time in an acute illness characterized by coma or convulsions. Such diagnoses rarely turn out right. (2) Never make a diagnosis of ptomaine poisoning without definite chemical evidence. General peritonitis or a tabetic crisis is usually the correct diagnosis. (3) In patients whose symptoms begin after forty-five years the actual diagnosis is more likely to be arteriosclerosis, hyperthyroidism, dementia paralytica or pernicious anemia rather than hysteria, neurasthenia or psychoneurosis. (4) Diagnoses of tertian malaria in patients whose symptoms resist quinine more than three days are almost invariably wrong. (5) Bronchial asthma beginning after forty usually spells heart or kidney disease. (6) Epilepsy beginning after forty usually means dementia paralytica or cerebral arteriosclerosis. (7) Typical migraine is often a symptom of unrecognized brain tumor or chronic nephritis. (8) Most cases of "bronchitis" mean tuberculosis, bronchopneumonia or multiple bronchiectatic cavities. (9) Aside from the immediate results of acute infections (such as scarlet fever, diphtheria, tonsillitis and pneumonia), "acute" nephritis usually turns out to be chronic. (10) Acute gastritis and gastralgia usually mean appendicitis, gallstones or peptic ulcer. (11) Pus in or near the liver is often mistaken for serous or purulent pleurisy, for it produces identical signs in the right chest, posteriorly. (12) An x-ray of the shinbones may give the first hint of an active syphilitic process in the joints or internal viscera.

14. Hirshberg advances the novel theory that the reactions such as urticaria, hyperemias, albuminuria, glandular swellings, resulting from the ingestion of certain foods, such as crabs, lobsters, berries, mushrooms, oatmeal and tomatoes, are anaphylactic phenomena, the system becoming sensitized to these various substances.

[E. H. R.]

### The Journal of Medical Research.

October, 1910.

1. *Smith, T. *The Reaction Curve of the Human and the Bovine Type of the Tubercle Bacillus in Glycerine Bouillon.*
2. *Park, W. H., and Krumwiede, C., Jr. *The Relative Importance of the Human and Bovine Types of Tubercle Bacilli in the Different Forms of Human Tuberculosis.*
3. De Witt, L. M. *Some Observations on Phenol as a Clearing Agent in Histologic Work.*
4. Torrey, J. C. *The Viscosimeter as an Aid in the Detection of Liquefying Bacteria.*

1. Theobald Smith reports in this article further study of the "reaction curve" derived from the culture of tubercle bacilli. The "curve" is the record of the reaction change in the medium in which the bacilli are grown. The author uses bouillon with 5% glycerine added; enough of this is placed in flasks of uniform size to make a layer 1.5 cm. deep; the flasks are then plugged with cotton-wool and the mouths covered with tin-foil. From time to time 5 ccm. of the bouillon are withdrawn and titrated. From the experiments which he has made, he has found that with bacilli of the human type there is a decrease of acidity for the first ten to fifteen days, after which there is a rapid increase, which reaches a maximum in from thirty to forty days. Cultures of the bovine type, on the other hand, show a decrease in acidity which in twenty to thirty days reaches alkalinity. The reaction then remains alkaline for at least thirty days more, and then slowly becomes acid.

Several other observers agree with these results. Griffith's results, which differed, were shown to have been secured by growing the bacilli in a thicker layer of bouillon which did not contain enough glycerine to insure an excess of what the bacteria could use, thus materially altering the conditions of the test.

The curve, Smith believes, is a valuable means for differentiating the two species of bacilli.

2. Park and Krumwiede present an exhaustive study of the question, how much of the tuberculosis in human beings shows evidence of bovine origin. Investigating 436 cases, they found that in the great majority of these the bacilli isolated could be grouped, according to their virulence and peculiarities of growth, in one of two quite distinct classes, i. e., as of the human or as of the bovine type. Their differences the authors believe to have been acquired by long-continued growth in cattle or in men; it is not possible, they think, for one type to acquire the characteristics of the other with any rapidity.

The writers give at length analytical tables of their own cases and of those reported by others. The final summing up is as follows: Of 1,042 cases, there were in adults sixteen years and over, 677 human, 9 bovine; in children five to sixteen years, 99 human, 33 bovine; in children under five years, 161 human, 59 bovine. From these figures it appears that the possibility of infection from milk, milk-products and meat, especially in children, is a matter of large importance.

[G. G. S.]

### Bulletin of the Johns Hopkins Hospital.

October, 1910.

1. Judd, C. C. W. *The Life and Work of Lister.*
2. Thomas, H. M. *Decussation of the Pyramids. An Historical Inquiry.*
3. Smith, J. T. *An Historical Sketch of Bloodletting.*
4. Von Pirquet, C. F. *The Importance of a Thorough Teaching of Infectious Diseases of Childhood in the Medical Curriculum.*

### The Practitioner.

September, 1910.

1. *Morris, H. *Some Points for Consideration in Relation to the Surgical Treatment of Renal Calculus.*
2. Leishman, W. B. *Some Points Concerning Typhoid Vaccine.*
3. Horder, T. J. *On Vaccine Therapy.*
4. *Bolton, C. *The Treatment and Pathology of Chronic Gastric Ulcer.*
5. *McCann, F. *On the Early Recognition of Cancer of the Bowels.*
6. Alexander, D. M. *The Auto-Intoxications of Epilepsy.*
7. McCrea, H. M. *Coli-Uria.*
9. Williamson, R. T. *Cases of Ataxia due to Diseases of the Cerebellum or of the Adjacent Parts.*
10. Stephens, G. A. *The Part played by Colloids in Physiology and Pathology.*
11. Higgins, H. *Certain Urinary Reactions and Their Significance in Chronic Conditions of Faulty Metabolism.*
12. Yearsley, M. *A Retrospect of Otology.*

1. Morris, discussing the surgical treatment of renal calculus, considers the following points: (1) When bilateral renal calculus should be operated upon simultaneously; (2) when nephrectomy should be the treatment for ureteral calculus; and (3) when the surgical treatment of renal calculus should not be checked or modified because of the presence of tubercle bacilli in the urine.

4. Bolton considers the following questions: (*a*) How does an acute gastric ulcer heal? (*b*) Do any conditions exist which can delay the healing of such an ulcer? (*c*) Why does a chronic ulcer not heal? He has studied these questions by means of artificially produced ulcers in cats. By injecting a gastro-toxin (prepared from goat serum by rendering the goats immune to injected gastric cells of a cat) into the stomach wall of cats he was able to produce at will typical gastric ulcers. He has studied the healing on a normal diet, the effects of position, of the hyperacidity of the gastric juice, and the effect of diminished acidity;

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the effects of acute ulcer upon the production of hydrochloric acid and the effects of bacterial finding. He goes into the production of motor insufficiency and the effects of pyloric stenosis upon the healing of acute gastric ulcer. All these points studied in the cat he applies to ulcer in human beings, citing several cases.

5. In discussing the early recognition of cancer of the womb, the writer concludes as follows: (1) Attend to all symptoms suspicious of cancer and instruct the patients upon the importance of them. (2) Examine all cases of bleeding or abnormal discharge. (3) Operate as soon as the diagnosis is established, if the disease is not too far advanced. [J. B. H.]

Deutsche Medizinische Wochenschrift. No. 38.

Sept. 22, 1910.

1. *Richter, P. F. *Renal Dropsy.*
2. Hermes, O. *Peritonitis following Perforation of Typhoid Ulcer.*
3. Gordon. *Concerning Endotoxim, the Specific Substance Isolated in A. T. (Koch).*
4. Gownvitsch, M., and Bourmann, S. *Ehrlich's Preparation "606."*
5. Knauth. *Clinical and Bacteriologic Observations on a Case of Mixed Infection with Streptococcus and Tubercle Bacilli and Another Case of Cryptogenic Staphylococcus Sepsis.*
6. Savels, A. *Cause of Nitrite Poisoning by Inhalation of Nitric Acid.*
7. Rhese. *Diagnosis of Disease of the Ethmoid and Sphenoid Bones by Means of the Röntgen Ray.*
8. Töpfer, H. *Vaginal Cæsarean Section.*
9. Fischer, H. *A Method of Anesthesia with Alypin.*
10. Skutetzky, A. *Permanent Preparations of Urinary Sediment.*
11. Walterhöfer, G. *The Therapeutic Value of Fibrolysins.*
12. Meyer, L. *The Cause of the Wassermann Reaction. (Remarks on a Paper in No. 35 of this Journal on This Subject.)*

1. Richter takes up the question of renal dropsy, mentioning many of the different theories and the experimental proof which supports or refutes them. Our present knowledge shows that there must be present three factors. These are an injury to the kidney which causes retention of salt and water, a hydremia dependent upon this, and, finally, an injury to the vessel wall with increase of permeability. He considers that the salt retention is the cause of the water retention, but not of the edema which is dependent on the vessel injury. The practical point of treatment, however, rests upon the salt retention and its hydremia because this is the only factor that can be influenced by treatment. At present we have no method of curing the renal or circulatory injuries. [C. F., Jr.]

Berliner Klinische Wochenschrift. No. 39.

Sept. 26, 1910.

1. Aufrecht. *The Path of Infection in Tuberculosis of the Lungs; Its Clinical and Therapeutic Importance.*
2. Shaislee, A. O., and Meltzer, S. J. *Experimental Results Concerning the Treatment of Strychnine Poisoning with the Help of Intratracheal Insufflation.*
3. Mosler, E., and Valentin, B. *Pathology of Acute Articular Rheumatism.*
4. Cohn, M. *The Examination of the Stomach with the Bismuth Capsule.*
5. Derjushinski, S. *Four Cases of Resection of the Pylorus with Restoration to Health.*
6. Fischer, A. *Another Case of Torsion of the Pedicle of the Gall Bladder.*
7. Heim, P. *The Rôle of the Constitution in Pediatrics.*
8. Ledermann, R. *Concerning the Relation of Syphilis to Nervous and Other Internal Diseases on the Results of 573 Serum Examinations.*
9. *Kromayer. *Ehrlich's "606" in the Treatment of "Walking Cases."*
10. Engel, C. S. *Concerning a Method of Microdiagnosis in Syphilis.*
11. *Heymann, F. *The Combating of Postpartum Hemorrhage and the Avoidance of Manual Removal of the Placenta, by the Use of the Momberg Constriction Tube.*
12. Bachem, C. *New Remedies, Patent Medicines and Specialties.*
13. Coenen, H. *The New Attempts in the Treatment of Fractures.*

9. Kromayer states that it is as easy to treat patients with "Preparation 606" as with mercury, and that he has not found confinement in bed necessary. He uses small doses and administers the drug once or twice a day and allows his patients to walk about as they will during the course of the treatment.

11. Heymann reports two cases of postpartum hemorrhage successfully checked by means of the Momberg constriction. Not only does this have the effect of mechanically checking the hemorrhage by pressure on the blood supply of the pelvic organs, but also, by the anemia produced in the uterus, that organ contracts most firmly and forcibly, expelling the placenta and making manual extraction unnecessary. He quotes authorities who have had good results with this method, and one who reports failure. [J. L. H.]

Annales de l'Institut Pasteur.

Aug. 25, 1910.

1. *Richet, C. *New Experiences with Crepitine and Actino-Congestine (Anaphylaxis and Immunity).*
2. Bertrand, G., and Rosenblatt. *The Temperature Destructive to the Vegetable Tyrosinases.*
3. Bonet, G., and Rouband, E. *Different Experiences with the Transmission of Trypanosomes by Flies.*
4. Agulhon, H. *Influence of the Reaction of the Media upon the Formation of Melanine by Diastatic Oxidation.*

1. Richet has continued his experiments with crepitine and has further facts to report than in his recent publication in this journal. As a result of his experimental work he concludes that with the injection of an antigen both toxogenic substance and an antitoxic substance are formed. This former substance, when united with some more of the antigen, forms a substance which he calls "apotoxin" and which is very poisonous and causes symptoms ranging from excitability and pruritus to coma and death from respiratory paralysis.

He presents a number of observations which in themselves individually point to the correctness of this view, but which taken collectively make it almost absolutely certain.

His theory is that anaphylaxis is a method of the body to keep a foreign albumen from getting a hold on the individual cells. In this way the specificity of the organisms are maintained. Chemical poisons do not seem to act in the same manner as these albuminoid ones. [C. F., Jr.]

Revue de Chirurgie.

June, 1910.

1. Delbet, P., and Dupont, R. *Chloroform, Chloral, Scopolamine.*
2. *Carrel, A. *Remote Results of the Transplantation of Veins into Arteries.*
3. Faix, A. *Fifteen Cases of Malignant Tumors of the Orbit.*
4. Leriche, R., and Cotte, G. *Classification and Pathogenesis of Tumors of the Jaws of Dental Origin.*
5. Capdepont, C. *The Rôle and Mechanism of Infection in Accidents of the Wisdom Tooth.*
6. Monod, C., and Vanverts, J. *Documents and Remarks on the Treatment of Arterial Aneurysms.* (To be continued.)

2. After reviewing previous work on arteriovenous anastomosis and describing the technic of transplanting a section of vein into an artery, Carrel reports examination, after death from other cause, of two cases in which such experimental implantation in dogs had been done nearly two years before. In both the venous segment was found in perfect histologic and functional condition. Whether this would continue true after a longer time, or in human beings, remains to be determined. [R. M. G.

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JULY, 1910.

1. QUÉNU, E., AND MATHIEU, P. *Treatment of Vicious Ankyloses of the Hip by Oblique Transtrochanteric Ostéotomy.*
2. PATEL, M., AND COTTE, G. *Umbilical Fistulæ following Calculous Cholecystitides.*
3. KENDIRDJY, L., AND SEJOURNET, P. *Torsion and Strangulation of the Sero-Appendices Epiploicæ in Hernial Sacs.*
4. CALVÉ, J. *A Peculiar Form of Pseudo-Coxalgia.*
5. SEJOURNET, P. *Chronic Simultaneous Hypertrophy of the Lachrymal and Salivary Glands.*
6. BOECKEL, A. *Traumatic Dislocations of the Tarsal Scaphoid, Particularly Double Dislocations.* (To be continued.)
7. HALLOPEAU, P. *Lateral Suture of the Portal Vein.*
8. MONOD, C., AND VANVERTS, J. *Documents and Remarks on the Treatment of Arterial Aneurysms.* (To be continued.)
9. PICQUÉ, R. *Subphrenic Abscesses.* (To be continued.)

AUGUST, 1910.

1. *QUÉNU, E. *Icterus in Hydatid Cysts of the Liver.*
2. BOECKEL, A. *Traumatic Dislocations of the Tarsal Scaphoid, Particularly Double Dislocations.* (Continuation.)
3. KÜSS, G. *Pelvic Pericolic Strictures, Principally in the Female.* (Conclusion).
4. MONOD, C., AND VANVERTS, J. *Documents and Remarks on the Treatment of Arterial Aneurysms.* (Conclusion.)

1. From a study of 50 personal cases of hepatic echinococcosis, and comparison of these with others reported in the literature, Quénu concludes that icterus is much commoner in the course of hydatid disease than is generally supposed; that such icterus may be due to compression of the biliary passages at the hilus or to angiocholitis; that the former, however, is an exceptional, and the latter the habitual, cause. In a few cases he considers that the angiocholitis is the terminal episode of a septicemia occasioned by an infected hydatid cyst; more often that it is the result of the irruption into a primary duct of the contents of a broken cyst. Such rupture may be spontaneous, or may be due to minor trifling accidental violence. Clinically, the jaundice due to angiocholitis is variable; that due to compression is progressive. [R. M. G.]

SEPTEMBER, 1910.

1. GUIBÉ, M. *Laceration of the Mesentery in Strangulated Herniæ.*
2. ABADIE, J., AND RANGÉ. *Fractures of the Tarsal Scaphoid.*
3. *LE DAMANY, P., AND SAIGET, J. *Partial and Complete Dislocation of the Hip in the Newborn.*
4. DELORE, X., AND ALAMARTINE, H. *Post-Operative Tetania Parathyreopriva, and the Technic of Thyroidectomy, Principally in Basedow's Disease.*
5. PICQUÉ, R. *Subphrenic Abscesses.* (Conclusion.)

3. The authors present a further study on the ever-fertile subject of the causes of congenital dislocation of the hip. They conclude that any anomalous position of the lower extremity may cause dislocation of the hip after the first half of fetal life. Certain pelvic malformations may produce the same result. The immediate cause of such dislocations is often dystrophy of the peri-articular muscles. In newborn children, especially in girls, the hip can often be easily dislocated. The writers believe that so-called anthropologic congenital dislocation of the hip occurs in reality after birth. [R. M. G.]

IL POLICLINICO.

JULY, 1910.

MEDICAL SECTION.

1. GOSIO, B. *Robert Koch and His Work.*
2. BOSELLINI, P. L. *General Erythematous Desquamative Tuberculosis of the Skin.*
3. STRADIOTTI, G. *A Case of Multiple Calcifications of the Subcutaneous Tissue of Syphilitic Origin.*
4. PANICHI, L., AND VARNI, R. *The Action of Extracts Derived from Malignant Tumors of the Endocardium.* (To be continued.)

SURGICAL SECTION.

1. *MARAGLIANO, D. *Active Anaphylaxis and Carcinoma.*
2. *ISAJA, A. *Passive Anaphylaxis as a Means of Diagnosis of Malignant Tumors.*
3. GUSSIO, S. *A New Surgical Intervention for Salivary Fistula.* (Conclusion.)
4. *BRUGNATELLI, E. *Tumors of Suprarenal Type and Unknown Seat with Multiple Subcutaneous and Submucous Metastases.*
5. MANTELLI, C. *Contribution to the Study of Oblique Internal or Vesico-Pubic Inguinal Hernia.* (To be continued.)

1 and 2. The question of anaphylaxis in malignant disease is one of considerable importance, on which little work has as yet been done. The authors of these two papers consider it from different points of view. From two series of experiments on guinea pigs Maragliano concludes that it is impossible to obtain in them a specific active anaphylaxis of carcinoma. From four series of similar experiments Isaja concludes that the fall of temperature following the injection of cancerous human serum into guinea pigs is not a specific anaphylactic phenomenon, and that, therefore, passive anaphylaxis in guinea pigs cannot be used as an aid in the diagnosis of malignant tumors.

4. Brugnatelli's article emphasizes the importance of histologic examination of metastases in the diagnosis of a primary tumor. [R. M. G.]

AUGUST, 1910.

MEDICAL SECTION.

1. *INADRI, G. *A Contribution to the Study of Anemia from Necator Americanus (Stiles).*
2. NOÈ, G. *Special Points and General Considerations on the Percentage of Infected Anopheles found in the Roman Campagna during the Malarial Season of the Year 1909.*
3. CANTONI, G. *The Desmoid Reaction of Sahli.*
4. PANICHI, L., AND VARNI, R. *The Action of Extracts Derived from Malignant Tumors of the Endocardium.*
5. FRUGONI, C. *Clinical Studies on Alterations of the Respiratory Rhythm, with Special Reference to the Anginal and Neurotic Forms.* (To be continued.)

1. Madri reports a case of severe anemia due to Necator Americanus (a species of ankylostoma) in a young peasant of Modena. The blood was that of secondary anemia of chlorotic type with leucocytosis, moderate eosinophilia and marked excess of platelets. The cryoscopic point of the blood serum was normal, the viscosity of the blood diminished, the electric conductivity increased. The Wassermann test was negative and the amount of alexin in the blood was somewhat diminished. [L. D. C.]

SURGICAL SECTION.

1. FICHERA, G. *Hypophysis and Castration.*
2. MANTELLI, C. *Contribution to the Study of Oblique Internal or Vesico-Pubic Inguinal Hernia.* (Conclusion.)
3. *ABETTI, M. *The Granulations of Leucocytes in Pus.*
4. GAMBAGLIO, R. *Fractures of the Carpal Scaphoid.* (To be continued.)

3. Abetti made a study of the leucocytic granulations in pus from 24 cases of suppurative disease of various origin to determine whether there were any relations between the causative agent of the infection and the nature of the leucocytes. His conclusions are as follows:

(1) That in the majority of bacterial suppurations, the principal constituent elements of the pus are polymorphonuclear neutrophiles.

(2) That in gonorrheal suppurations there is a slight proportional increase of polymorphonuclear eosinophiles

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(3) That in chemical subcutaneous suppurations there is an exudation of polymorphonuclear neutrophiles with desquamation of the lymphatic endothelium.

(4) That the iodophilic reaction is always positive, whatever the nature of the suppuration.

These results are the same as those reached by Leoncini in his study of the cytology of peritoneal exudates.

[R. M. G.]

# Correspondence.

## PARIS LETTER.

### Solar Cure of Surgical Tuberculosis.

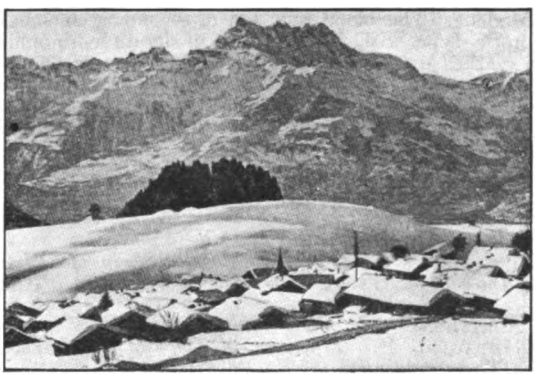
[*From Our Special Correspondent.*]

Paris, Sept. 27, 1910.

*Mr. Editor:* A friend of mine, just back from Switzerland, tells a remarkable tale about an experiment he has there seen in the matter of treatment of surgical tubercular lesions of all varieties, osseous, nodular and serous. Experiment, however, is hardly the proper term, as the treatment has now been in use for seven years; the establishment my friend visited consists of three sanatoria, capable of accommodating upwards of three hundred patients, and is directed by a certain Dr. Rollier, with an assistant at each sanatorium. It will perhaps be best to relate the entire history of this place.

Dr. Rollier is a young surgeon who for four years was assistant to Kocher at Berne. In 1903 his wife showed signs of pulmonary trouble, and he took her off to Leysin for the altitude cure. Leysin is a place that deserves a few words of description.

Most travelers are familiar with the eastern end of Lake Geneva, the Dent du Midi, and the Valais, leading to the Simplon. On the northern side of this valley, above Aigle and almost opposite the Dent du Midi, at an altitude of 1,200 to 1,500 meters, lies a beautiful alp, as the Swiss call it, a high pasture-ground, sloping gently up to the pines and rocks, and facing due south. On this slope there has always been a peasant's agglomeration of chalets, but a few years ago, when the sanatorium movement became so popular, the natural advantages of the spot were discerned and one sanatorium after another was erected along the upper edge of this alp. These were, however, solely for pulmonary tuberculosis, and the results obtained from them have been very satisfactory, owing to certain peculiarities inherent in Leysin's position: unusual absence of wind, intense solar radiation, and great purity of air.



The village of Leysin and the Dent du Midi.

It was to this resort that Dr. Rollier accompanied his patient, and as he himself had no other resources but his practice, and as there was no vacancy for him on the staff of the sanatoria, he established himself in the village as local general practitioner. About this time he heard reports of what Dr. Bernhardt, of Samaden in the Engadine, was doing in the way of treating sluggish wounds of all sorts by solar radiation, and went over there to look into the method; he then returend to Leysin, began little by little to apply the system to surgical tuberculosis, and has now evolved a treatment of which he is perfectly master and which bids fair to place him in the foremost rank of the men who have been of use in the fight against tuberculosis. His system is as yet hardly known, as his communications on the subject have scarcely spread beyond local societies; but my informant is a first-class Paris surgeon, who went carefully over the ground for his own instruction, so that I fancy there is no mistake about the matter. It is guaranteed, furthermore, by Dr. Rollier's personal surgical qualifications, and again by the evident practical success of the venture from a business point of view.

He takes no medical cases, though naturally he gets a few in patients with external lesions as well, but he says that the method appears to work admirably in pulmonary trouble, as was also demonstrated by the entire recovery of his wife. His ordinary patients are cases of fungous arthritis, Pott's disease, tubercular cystitis, peritonitis, glands of all sorts, tubercular skin lesions, etc., as well in adults as in children, though of course the majority of his patients are children. He does not neglect the usual means of treatment, — injections, plaster jackets, x-rays, etc., — but combines them with his method, which consists in acting on the system in general, not on the local lesion, by solar radiation.

Leysin, les Frênes, altitude 1,360 meters. Dr. Rollier's clinic.

His sanatoria face the sun, as was to be expected, and are abundantly provided with balconies and open roofs on to which the beds are wheeled from the rooms and dormitories. The patient's entire body, front and back, is

Sun-cure in winter. A gallery of the chalet.

exposed to the sun, with or without apparatus, and winter as well as summer, during a time that varies according to the child's condition of health and state of training. He begins with exposure of the feet only for five minutes *ter die*, first one side, then the other. The patient must be apyretic or almost so, — under 38°. The period of exposure is then gradually lengthened until it reaches as

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much as six and seven hours *per diem*. So great has become Dr. Rollier's skill and so delicate his "touch" that he breaks his patients in without so much as an acute sunburn, until finally they become an almost walnut-brown hue. And he has found that the quicker and more intense this pigmentation, the better the patient's outlook; it takes place most rapidly with dark subjects, less so with blonds, and least so with the venetian-red type, which corresponds with our ordinary basis of prognosis in this complaint.

At first sight the idea of a little child being exposed *naked* to several hours of sunlight on a balcony in Switzerland in midwinter at an altitude of 1,500 meters, with everything about it covered with several feet of snow, is simply terrifying. What mother could be brought to accept such apparent risks as these! This difficulty has to be turned by getting the parents used to the treatment by degrees, in the same manner as is done with the patients. They are shown the initial five-minute exposure, which is not very dreadful, and the rest is a question of time. Besides, ideas are contagious; the parents meet other patients in the hotels, and are told of the anguish the latter passed through, but how pleased they now are with the results, so that the trouble on this score is not very great. But for the uninitiated to see a picture of a lot of naked, brown children, some with plaster jackets on, playing on beds in the brilliant sunshine in midwinter with the country about them buried in snow, is, to say the least, startling. Some cases, Pott's disease of the spine, for instance, are made to lie still in the sun on their beds; these children wear white hats, and flying screens are put up to keep the glare out of their faces.

The galleries in winter.

The treatment at Leysin is based partly on altitude and partly on solar radiation, and the explanation of the tolerance of even little children in a state of nudity to solar exposure in winter at that altitude lies, of course, in the fact that the circumambiant air is not at all what a person would be inclined to think. It is in reality very hot on those balconies, the temperature reaching 45 and 50° C. even in December, January and February (113–122° F.). So it is not surprising that the children not only stand it, but like it. This is furthermore helped out by the almost total absence of wind, for it is doubtful whether such a treatment could be carried out in a place exposed to cold winds, no matter how much sun there were.

Not among the least of the attractions of Leysin is the view from the sanatoria, though probably this is a matter of minor interest to the children than the toys on their beds. In the foreground is the snow-covered alp, and the low, flat chalets, also buried in snow; then some dark, pine-grown hills, and back of them still the magnificent Dent du Midi with the group of snow mountains of which it is the most prominent portion.

One of the first results of the solar radiation treatment is the disappearance of pain, — in coxalgia, for instance, where this symptom decreases or is relieved sometimes by a single exposure. As regards tubercular glands, Dr. Rollier says that this is certainly the best treatment known; they are either absorbed spontaneously and vanish, or else soften under the influence of the light and disappear after one or two evacuating punctures without leaving any mark.

The solar radiation has not only an extraordinary invigorating action on the system in general, but is a most powerful bactericidal agent as well, particularly in winter, when the power of the heat rays is far distanced by that of the light rays. There is then no dust at all at Leysin, on account of the blanket of snow that is spread over everything, and there is nothing whatever in the atmosphere (very little moisture, even) to absorb rays; the sky is of an indigo blue, and the excursus between the maximum and minimum temperature of the twenty-four hours can be as much as 120° F.

Here is what Dr. Rollier has to say about mountain climates in general: "A high mountain or alpine climate is the most favorable one for solar treatment. Solar radiation only reaches the lowlands after having passed through the atmospheric layer. The lower levels of this atmosphere, and in particular those of cities, are thick with dust, micro-organisms, aqueous vapors and humanity which absorb light in proportions that may extend to 90%; these layers of air laden with dust, which a physicist has called atmospheric sediment, are powerful absorbers of luminous and caloric radiations whose intensity is in direct relation to altitude. Furthermore, in the lowlands these opaque layers of air absorb the heat rays and protect the ground against their action; the air is hot there as well as the soil. In the mountains the case is altogether different. The transparent and dust-free air allows the solar radiation to pass freely through it so that none of its energy is held back. It can, therefore, act altogether on the soil and transmit its heat, while the air remains quite cool. This contrast between the power of the direct rays of the sun and the coolness of the atmosphere is one of the characteristics of mountain climates and is most favorable to the sun treatment, since the heat, modified by the cool air, is never unpleasant to patients as is the case in the lowlands, and the duration of the sun baths can be prolonged without any risk."

Patients are now coming to Dr. Rollier from all over Europe, but in particular from Switzerland, Germany, Austria and Russia.

My informant describes the results obtained by this method as "absolutely admirable." Its essential action resides in transforming the patient's general condition by this total exposure of the surface of the body to the action of the sun's rays. In treating spinal or hip trouble of tubercular origin the surgeon generally aims at ankylosis in a good position as the best he can do for the patient, and is quite content if he gets that, but with Dr. Rollier's system a *restitutio ad integrum* is frequently obtained, with free movements in the joints affected. Not only can this result be accomplished in the favorable cases of closed lesions at an early stage, but in some cases of open lesions, even in adults! Cases that formerly were considered practically hopeless, such as Pott's disease of the spine, with abscess by congestion open and infected, recover under the sun treatment, though such results are naturally not as brilliant as when the case can be treated earlier in the disorder. One patient that came under Dr. Rollier's care had twenty-five different tubercular lesions disseminated about the body and recovered! Another adult patient at the sanatorium gained 38 lb. in weight in six months on the sun baths alone.

The treatment is not a rapid one, nor was that to have been expected: all chronic disorders imply a chronic treatment. An ordinary case requires upwards of two years in the mountains. But even this is better than the classical surgical treatment by immobilization, and as has been remarked above, the ultimate outcome is far superior, with a free joint. It is preferable to send patients to Leysin in December and May, the beginning of the fine seasons, when they are going there for the first time; the winter treatment is superior to the summer, there is less wind, and all dust is smothered under the snow.

Dr. Rollier's success is all the more creditable to him in that it was achieved in spite of the united opposition of his medical confrères up at the pulmonary sanatoria; and one of the best proofs of the credibility of the reports that have come about his treatment is that the well-known surgeon, Roux, of Lausanne, is sending his cases up to Leysin.

"S."

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## RECORD OF MORTALITY

For the Week ending Saturday, Oct. 15, 1910.

| Cities. | Reported deaths in each. | Deaths under five years. | Cities. | Reported deaths in each. | Deaths under five years. |
|---|---|---|---|---|---|
| New York | 1,180 | 419 | Waltham | 4 | 1 |
| Chicago | 553 | 163 | Pittsfield | 12 | 3 |
| Philadelphia | — | — | Brookline | 6 | — |
| St. Louis | — | — | Gloucester | 4 | — |
| Baltimore | — | — | North Adams | 6 | 1 |
| Cleveland | — | — | Northampton | 4 | 1 |
| Buffalo | — | — | Chicopee | 7 | 1 |
| Pittsburg | — | — | Medford | 3 | — |
| Cincinnati | — | — | Beverly | 2 | 1 |
| Milwaukee | — | — | Leominster | 2 | — |
| Washington | — | — | Hyde Park | 7 | 1 |
| Providence | — | — | Melrose | 2 | 0 |
| Boston | 205 | 64 | Newburyport | 3 | 2 |
| Worcester | 40 | 8 | Revere | 4 | 2 |
| Fall River | 30 | 12 | Westfield | 5 | 2 |
| Cambridge | 31 | 7 | Woburn | 3 | 2 |
| Lowell | 40 | 21 | Peabody | — | — |
| New Bedford | 26 | 14 | Marlboro | 2 | 2 |
| Lynn | 20 | 6 | Attleboro | 5 | 2 |
| Springfield | 29 | 5 | Adams | — | — |
| Lawrence | 29 | 10 | Clinton | 1 | 1 |
| Somerville | 9 | 1 | Gardner | 8 | 6 |
| Brockton | 11 | 2 | Milford | — | — |
| Holyoke | 21 | 12 | Watertown | 5 | 0 |
| Malden | 5 | — | Plymouth | — | — |
| Chelsea | 11 | — | Southbridge | 2 | 2 |
| Newton | 7 | 5 | Weymouth | — | — |
| Salem | 10 | 5 | Framingham | 5 | 2 |
| Haverhill | 12 | 5 | Wakefield | — | — |
| Fitchburg | — | — | Webster | 2 | — |
| Everett | 9 | 6 | Arlington | — | — |
| Quincy | — | — | Greenfield | 2 | — |
| Taunton | 13 | 5 | | | |

## LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND OTHER OFFICERS OF THE PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDED OCT. 12, 1910.

Wickes, H. W., surgeon. Directed to proceed to New Orleans (Quarantine), La., upon special temporary duty. Oct. 10, 1910.

Lumsden, L. L., passed assistant surgeon. Directed to proceed to Huntsville, Ala., upon special temporary duty. Oct. 7, 1910.

McClintic, T. B. passed assistant surgeon. Granted fourteen days' leave of absence from Oct. 5, 1910.

McLaughlin, A. J., passed assistant surgeon. Directed to proceed to Chicago, Ill., upon special temporary duty. Oct. 10, 1910.

Francis, Edward, passed assistant surgeon. Granted thirty days' leave of absence from Oct. 3, 1910.

Rucker, W. G., passed assistant surgeon. Directed to proceed to Baltimore, Md., upon special temporary duty. Oct. 7, 1910.

Spratt, R. D., passed assistant surgeon. Granted four days' leave of absence from Sept. 28, 1910, on account of sickness.

Alford, Neil, acting assistant surgeon. Granted thirty days' extension of leave of absence from Aug. 29, 1910, on account of sickness, and fourteen days' annual leave from Sept. 28, 1910.

Barclay, James, acting assistant surgeon. Granted thirteen days' leave of absence from Oct. 10, 1910.

Bingham, E. O., acting assistant surgeon. Granted fifteen days' leave of absence from Oct. 15, 1910.

Goldthwaite, Henry, acting assistant surgeon. Granted seven days' leave of absence from Oct. 6, 1910.

Scott, E. B., pharmacist. Granted twenty-three days' leave of absence from Oct. 17, 1910.

### BOARD CONVENED.

Board of medical officers convened to meet at Stapleton, N. Y., Oct. 18, 1910, for the purpose of making a physical examination of a cadet of the United States Revenue Cutter Service. Detail for the board: Surgeon H. W. Austin, chairman; passed assistant surgeon W. A. Korn, recorder. Oct. 11, 1910.

## SOCIETY NOTICES.

Association of Railway Surgeons. — The twentieth annual meeting of the New York and New England Association of Railway Surgeons will be held at Hotel Astor, Broadway and 44th Street, New York City, Thursday and Friday, Nov. 3 and 4, 1910.

The Harvey Society. — The second lecture of the Harvey Society will be delivered by Prof. W. E. Castle, of Harvard University, on Saturday, Nov. 5, at 8.30 P.M., in the Academy of Medicine, 17 West 43d St., New York. Subject: Unit Characters in Heredity.

Boston Medical Library in Conjunction with the Suffolk District Medical Society. — Medical section meeting, John Ware Hall, Wednesday, Nov. 16, 1910, at 8.15 P.M. "Acute Poliomyelitis," John Lovett Morse, M.D. Discussion by Drs. R. W. Lovett, W. E. Paul and W. P. Lucas.

Edwin A. Locke, M.D., *Secretary*, 311 Beacon St.
Henry Jackson, M.D., *Chairman*, 380 Marlborough St.

Suffolk District Medical Society. — Stated meeting, Saturday, Oct. 29, at 8.15 P.M. "What Medical Societies can do for the Health of the People." Paper: By Mr. John Ritchie, Jr. (For two years member of the Boston Board of Health.) Discussion: Formal discussion by invited guests will be omitted; instead, it is hoped that there will be free general discussion by the members of the Society. Business: Election of Nominating Committee; Revision of the By-Laws of Suffolk District Medical Society. Refreshments after the meeting.

Geo. H. Monks, *President*.
David D. Scannell, M.D., *Secretary*.

## RECENT DEATHS.

Dr. William W. Baldwin, who died of apoplexy last week at Great Bend, Pa., spent the greater part of his professional life in Italy, where he practised medicine at Rome and at Florence. He is survived by his widow, four sons and two daughters.

Dr. George Whipple Porter, who died at Dorchester on Oct. 15, was born in 1847. He received the degree of A.B. from Brown University in 1870 and that of M.D. from the Harvard Medical School in 1874. He practised medicine in Providence, R. I.

Dr. Abram Brothers, of New York, died on Oct. 15. He was graduated from the College of Physicians and Surgeons, New York, and afterwards served as interne at Bellevue Hospital. At the time of his death he was adjunct professor of diseases of women in the New York Post-Graduate Medical School and visiting gynecologist to the Post-Graduate and Beth Israel hospitals.

James H. Denny, M.D., formerly of Boston, and at one time a visiting physician at the Boston City Hospital, died at Vienna, Austria, Oct. 16, at the age of seventy-one years. He was a member of The Massachusetts Medical Society from 1863 to 1892.

## BOOKS AND PAMPHLETS RECEIVED.

Treasury Department, Hygienic Laboratory, Bulletin No. 63. Digest of Comments on the Pharmacopeia of the United States of America and the National Formulary for the year ending Dec. 31, 1907. By Murray Galt Motter and Martin I. Wilbert.

Treasury Department, Hygienic Laboratory, Bulletin No. 67. The Solubilities of the Pharmacopeial Organic Acids and their Salts. By Atherton Seidell.

The Role of Obstetrics in Preventive Medicine. By W. P. Manton, Detroit. Reprint.

Further Observations on the Milk Supply of Washington, D. C. By G. Lloyd Magruder, Washington, D. C. Reprint.

Further Observations of Parameba Hominis, an Intestinal Parasite of Man. By Charles F. Craig, M.D., Washington, D. C. Reprint.

"Go Ye into all the World; Preach the Gospel; Heal the Sick." By DeWitt G. Wilcox, M.D., Boston, Mass. Reprint.

Cranial Injuries as Productive Factors in Criminality. By DeWitt G. Wilcox, M.D., Boston, Mass. Reprint.

The Education of Women Relative to Diseases Incident to the Menopause. By DeWitt G. Wilcox, M.D., Boston, Mass. Reprint.

Report of Three Unusual Cases. By W. P. Manton, M.D., Detroit. Reprint.

The Histogenesis of the Blood Platelets. By James Homer Wright, M.D. Reprint.

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(See Bull. 61, Hyg. Lab., Bureau of Public Health and Marine-Hospital Service, Washington, D.C., 1910.)

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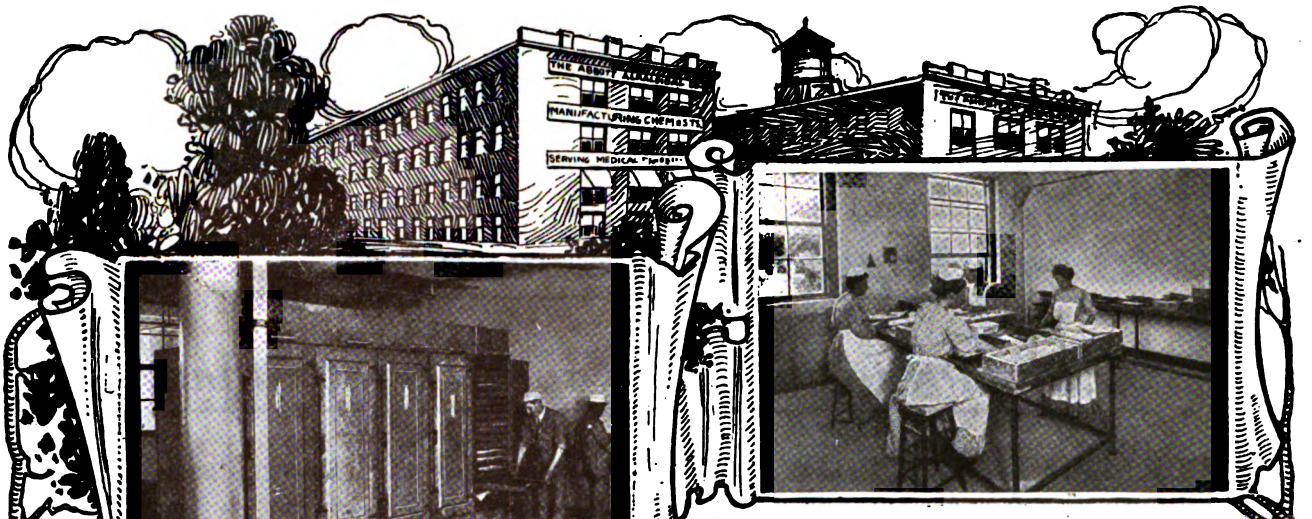

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# *A Few Reviews of*

# Goldthwait, Painter & Osgood's Diseases of the Bones and Joints

have been published. They are unanimous in their statement that the book is of exceptional value, that it is original, and that the purpose of the authors plainly set forth has been well accomplished.

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Although the authors in their preface disclaim any intention of writing a book on orthopedic surgery, this book is written with a remarkable breadth of view, and in a most scientific manner, and sums up well the modern knowledge on this branch of medicine. There is a marked absence of " canned material " from the book, which is most refreshing, the pathology is up to date and unusually good, and the differential diagnosis of the various diseases, except that of Potts' disease, is excellent. The chapter on osteomyelitis is far better than that on the same subject in most surgical textbooks, and those on tuberculosis of the smaller joints, the treatment of hip disease, and the technic of operations on tuberculous joints are all very well done, also that on pelvic articulations. The illustrations are numerous and clear, and made clearer by the notes that accompany them. It is evident throughout the book that the authors have studied their joints, and whenever it is possible they prove their case. The inclusion of a large number of histories is somewhat of a new departure. — *The Medical Record.*

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The authors have entitled the book " Clinical Studies," perhaps to disabuse the minds of those who might expect a " textbook " along the old lines, and they offer these studies primarily " to those practitioners of medicine to whom sufferers from joint disease usually make their first appeal." This does not mean that the book is elementary in its scope. It represents, on the contrary, a large part of the experiences, deductions and also results of original investigations of three busy men handling annually a large amount of clinical material. But as the style of presentation is up to what we expect from Boston, this is a work which can be read from cover to cover by any medical man. * *

As a whole, the volume stands as a contribution of science to humanity. Its pages not only show a spirit of aiding the cripple, but also breathe patriotic and humanitarian desires to help the nation and the race. It will awaken an interest in bone and joint diseases that, so far, has been dormant in many. It is another solar-plexus blow to the diagnosis " rheumatism." It should be read by every one who has treated, does now treat, or ever expects to treat, a case of bone and joint disease or disability. — *The Journal of the Minnesota State Medical Association.*

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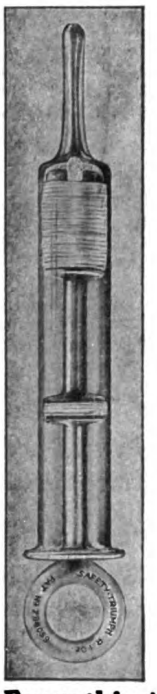

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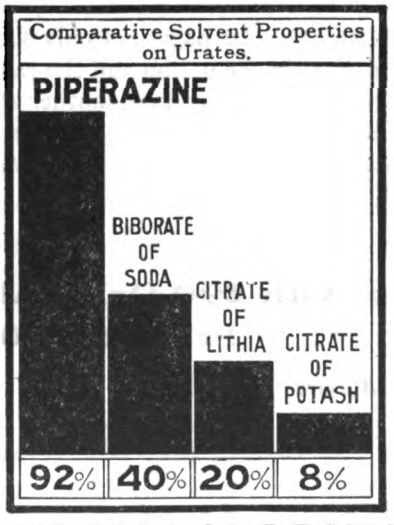


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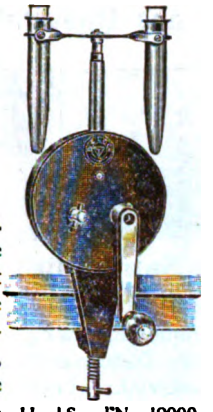

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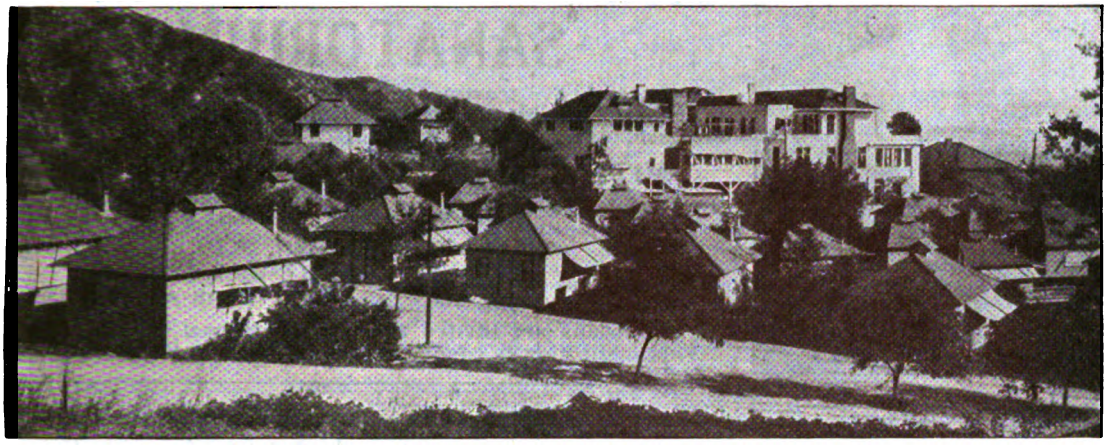

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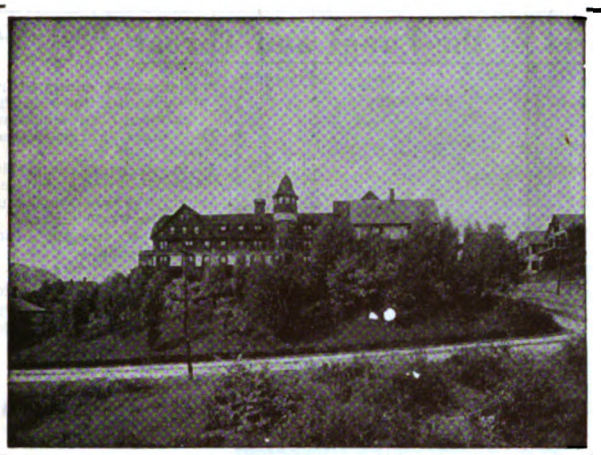

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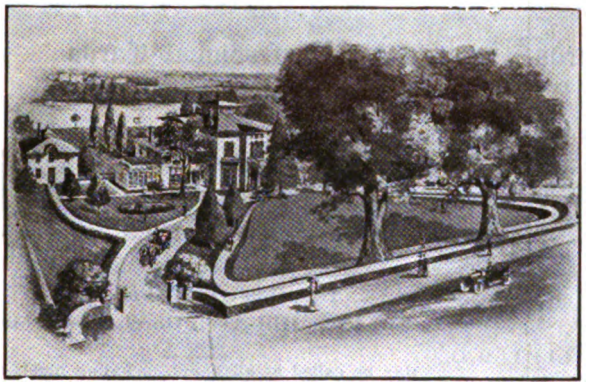

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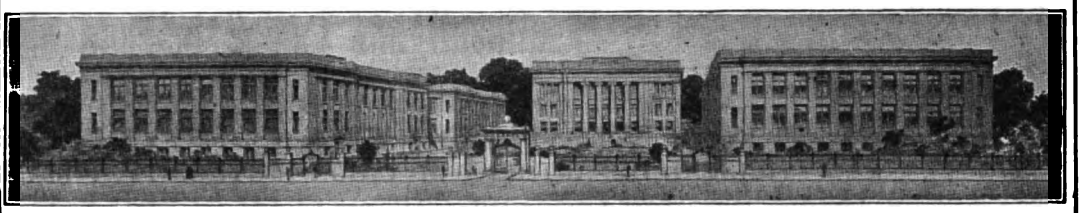

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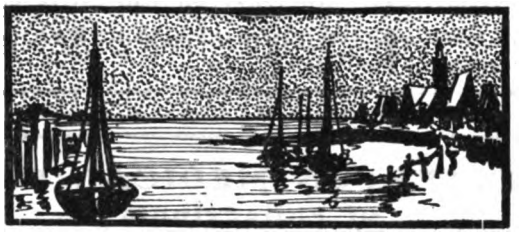

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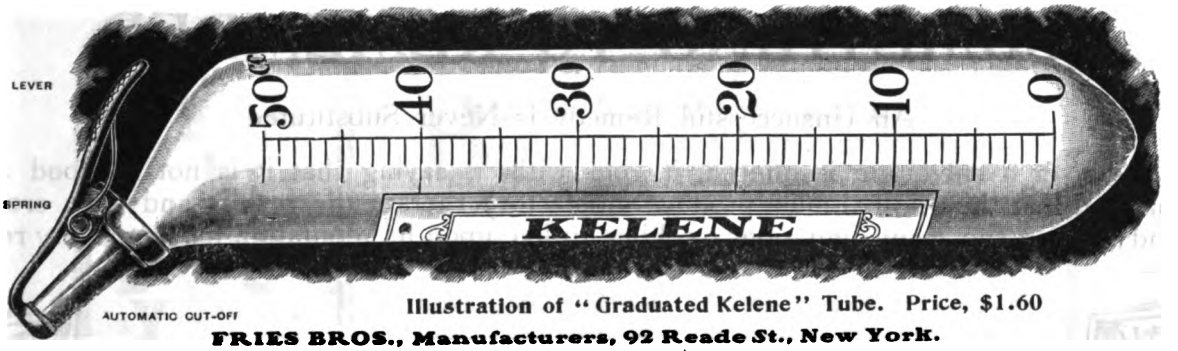


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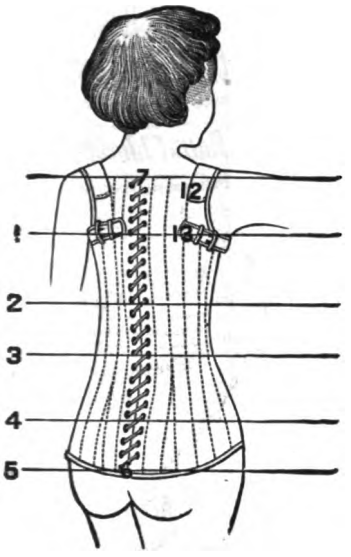


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## Original Articles.

### THE ETIOLOGY OF CHOLECYSTIC GALL-STONES.

BY W. IRVING CLARK, M.D., WORCESTER, MASS.

THE pathogenesis of gallstones has been a subject of great interest and continual investigation since the days of Galen. The large percentage of stones found at autopsy (7–10%) and the severity of the symptoms and complications have lead to an exhaustive study of the subject. While the definite cause of gallstones has not yet been established, so much progress has been made that it is now possible at least to draw a hypothetical picture of the different steps of gallstone formation derived from the hypotheses and results of various investigators. Such a picture should be of interest to the physician and surgeon in view of the wide range of complications which follow this condition.

In this paper a résumé of the theories of gallstone pathogenesis will be given, with a subsequent hypothetical picture of typical gallstone formation.

The hypotheses of pathogenesis of gallstones have considered almost every conceivable factor. Upon examination, however, these hypotheses fall into three broad groups which may be roughly classed as metabolic, histological and chemical.

Since gallstones consist principally of cholesterin and bilirubin calcium, the probable source of an over supply of these substances and the question of the method of their precipitation has formed the basis of each hypothesis.

In order to obtain a clear view of the field these hypotheses will be stated in brief and then considered in detail.

I. *Metabolic hypothesis.* — This hypothesis conceives increased biliary cholesterin and bilirubin calcium to be the result of some change in metabolism, which causes an increase of these substances in the blood. The liver then excretes them from the blood; they appear in the bile in abnormal amounts.

II. *Chemical hypothesis.* — This hypothesis conceives a precipitation of the cholesterin and bile pigment from the bile by some chemical change in the bile itself, due either to autolysis or to bacterial action.

III. *Histological or mucous membrane hypothesis.* — This hypothesis conceives the cholesterin and calcium of the bile to be formed entirely by the mucous membrane of the gall bladder and bile ducts, a catarrhal inflammation increasing the production of cholesterin and calcium.

The metabolic hypothesis was much favored up to the time of Naunyn. Austin Flint, Du Jardin-Beaumetz, Frerichs and others held this view, but following the work of Naunyn and his pupils the theory was not given as much support.

This was due to the fact that Naunyn fed dogs large quantities of cholesterin, and also injected it hypodermically, but was unable to recover an increased percentage of cholesterin from their bile.

These experiments, though apparently convincing at the time, are not above criticism. Thus, Herter[1] says that "it is impossible to insure prompt absorption from the intestine or from the peritoneum, and intravenous injections of finely divided substance (cholesterin is extremely insoluble) cause death from embolism." He furthermore concludes that "we cannot exclude the possibility that there are occasional disorders of nutrition attended with an increase of cholesterin in the blood serum and hence with an increase in the bile." As possible etiological factors he considers diabetes, arteriosclerosis and nephritis, basing his conclusion upon the finding of high cholesterin percentages or the presence of gallstones upon autopsy in these diseases.

Beer[2] has recently supported the metabolic hypotheses in an investigation of intrahepatic stones. He collected autopsy statistics upon twelve cases in which there had been obstruction of the common bile duct for a period of four to five weeks, accompanied by inflammation of the extra- and intra-hepatic ducts. These cases showed the classical conditions necessary for the production of gallstones, according to Naunyn. In seven of these cases the common duct was obstructed by stones; in five cases, by tumors. In the first series (the stone cases) he found many stones in the liver ducts, but in the second series of five cases, no stones were present. From this he argues that since the pathological conditions of the bile ducts were identical in both series, and one series, which already had gallstones lower down the tract, developed stones in the liver ducts, while the other series showed no stone formation; therefore, something more than mere stagnation of bile and infection of bile passages is necessary in the formation of stones. He suggests a derangement in the metabolic function of the liver as a probable etiological factor.

Howell,[3] in 1908, says, "It is assumed that cholesterin . . . is eliminated by the liver cells from the blood, which collects it from the various tissues of the body," while Hemmeter,[4] 1909, believes that gallstone formation may be due to pathologic metabolism of the liver.

Thus, though most authors hold strongly to some modification of Naunyn's mucous membrane hypothesis, they are not prepared to ignore the possibility of general metabolism as a factor in cholesterin and calcium production in the bile.

*Chemical hypothesis.* — Established by Thudicum[5] in days before the rôle of bacteria in disease was known, this hypothesis has had many supporters up to Naunyn. Following Naunyn's work the theory was allowed to drop until revived by Halia,[6] Gérard,[7] Kramer[8] and Bacmeister,[9] in the last four years.

Thudicum's hypothesis held that cholesterin and bile pigment were precipitated from stagnant bile as the result of an acidity which appeared in the bile after long standing. He believed that the acidity was due to the mucus in the bile and that this acidity caused a decomposition of the bile salts and alkaline carbonates which initiated a precipitation of cholesterin and bilirubin calcium. The possibility of such a reaction has

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been acknowledged by all investigators, and since the discovery of bacterial action, attempts have been made to show that this acidity could be produced by such action upon the bile.

Thus Halia[6] inoculated sterile and filtered ox bile, rendered alkaline, with typhoid and colon bacilli, with a resulting change of reaction of the media to acid. Dunham,[10] however, repeating this experiment upon human bile, found that even a considerable growth of these bacilli produced a hardly perceptible change of reaction toward acidity in from seven to ten days. Criticism has been made that Dunham's experiments were not carried on over a long enough period.

Gérard[7] added colon bacilli to sterile bile. He then incubated and after some weeks obtained a precipitation of cholesterin. This precipitation he believed was due to a dissolution of the bile salts (through acidity of the bile).

Kramer[8] has recently (1907) performed an interesting series of test-tube experiments in which sterile tubes of mixed bile and bouillon were inoculated with B. typhosus and B. coli communis. After six months there was a semi-solid precipitate taking the form of the bottom of the tube and consisting of all the constituents of gallstones. Kramer concluded that gallstone formation was the direct result of the growth of micro-organisms in the bile. Just what the exact chemical nature of the decomposition is he is unable to say, but suggests that it is due to acid production by the bacteria. This would agree with Halia's findings. Baldwin,[11] examining the gall bladders of a number of cases having cholecystitis following acute infectious diseases, found the bile to be acid or neutral.

Following Kramer's work, Bacmeister[9] began publishing a series of revolutionary papers. He found that B. pyocyaneus and B. proteus likewise cause a precipitation of cholesterin in the bile. Not satisfied with this, he carried out experiments still further and found that cholesterin would separate out of sterile bile on long standing. He describes the successive steps of crystal formation which he was able to watch under the microscope. The first phase of the cholesterin is in the form of myelin droplets, at first very minute, but gradually increasing in size and forming amorphous clumps of cholesterin. Fine crystals, needle-like in form, as well as the typical flat platelets of cholesterin, separate from the droplets or the amorphous masses.

He viewed this process in sterile and infected bile, but noted that it occurred much more rapidly if epithelial cells were present. From these experiments he believes that cholesterin precipitation is due to autolysis of the bile which is markedly hastened by the presence of bacteria or epithelial cells.

Summing up in his monograph with Aschoff,[12] he says: "We find the radiate cholesterin stone, as a rule, in non-infected simply stagnant gall bladders.

"The morphology of radial cholesterin stone shows a slow crystallization out of the bile. The chemical building up of the stone arises from synthesis of normal, not decomposition of infected, bile.

"The constituents of the stone can be precipitated from normal bile without infection through simple decomposition (test tube experiments). The radiate cholesterin stone occurs almost solely as a single stone."

*Mucous membrane hypothesis.* — This hypothesis is also an old one. It was suggested by Budd as far back as 1845, and revived in 1887 by Bristowe, but it received its strongest support in 1892, when Naunyn[13] published his classical monograph on cholesterin.

According to Naunyn, the steps in the pathogenesis of gallstones are as follows:

I. Stagnation of bile in the gall bladder.

II. Introduction of non-virulent bacteria into the gall bladder, these bacteria setting up a catarrhal inflammation of the mucous membrane.

III. An extrusion of cholesterin in amorphous or myelogenous form from the diseased mucous membrane.

IV. Collection of amorphous cholesterin about small masses of detritus and bacteria with subsequent crystallization.

V. Increasing precipitation of cholesterin from the inflamed mucous membrane.

VI. Precipitation of bilirubin calcium from the bile around the cholesterin nucleus.

VII. Replacement of the calcium in whole or in part by cholesterin through infiltration.

This theory has been slightly modified by subsequent experiments. Thus Wakeman[14] injected strong solutions of bichloride of mercury, carbolic acid and other irritating sterile drugs into the gall bladders of dogs. After starving the dogs for three days, they were killed and the bile analyzed. In all the dogs thus treated, the cholesterin content of the bile was much increased and there was proliferation and desquamation of the epithelial cells. He, therefore, concludes that bacteria *per se* are not necessary to cause cholesterin precipitation, as a catarrh of sterile origin produces a like result.

Adami and Aschoff[15] consider the amorphous form of cholesterin in the degenerated cells to be cholesteryl-oleate. They believe that the fatty acid unites with alkaline salts in the bile in the form of soluble soaps, and that there is a consequent precipitation of cholesterin. This view is based upon the refracting property of the amorphous globules. They are unable, however, to prove definitely that the amorphous bodies are chemically cholesteryl-oleate.

If the hypothesis of Adami and Aschoff proves correct, a most important question will be answered, viz., What initiates the primary precipitation of cholesterin crystals?

Baldwin[16] has shown that the desquamation of cells is considerable in infectious cholelithiasis and that cholesterin can be demonstrated in these desquamated cells.

Naunyn's hypothesis has been further strengthened by the experimental formation of gallstones, the experiments fulfilling as nearly as possible the laws he laid down. Thus experimentally,

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gallstones have been produced in dogs, rabbits and guinea pigs by injecting an attenuated culture of typhoid or colon bacilli into the gall bladder after ligation of the cystic duct, or having placed a sterile foreign body in the gall bladder.

It was found that injections of virulent bacteria produced an acute cholecystitis without resulting gallstones, and that unless there was a stagnation of bile such as caused by a complete or partial obstruction, the bile quickly became sterile and no stones were formed. Foreign bodies were introduced aseptically, but these failed to produce stones unless accompanied by bacteria. Thus we see that stagnation of bile and a catarrh of the mucous membrane are two essential conditions in the formation of gallstones.

*Calcium.* — So far only the precipitation of cholesterin has been considered. It must be remembered, however, that calcium in conjunction with bile pigment enters largely into every gallstone. It is generally believed that calcium is produced by catarrhal inflammation of the mucous membrane of the bile ducts and gall bladder and precipitates about a nucleus. In every catarrhal inflammation there is an extrusion of albuminous matter from the inflamed membrane. Naunyn found that on adding egg albumin to bile there was an immediate precipitation of bilirubin calcium. Herter says, "The view expressed by Gilbert that the biliary calcium is largely derived from the mucous membrane of the gall bladder, through its mucous and desquamated epithelium, is probably in large part correct. . . . But, so far as I am aware, careful experimental data relating to the point are lacking."

Funke considers that "the weight of evidence seems to point to the fact that the salts contained within biliary concretions are largely a product of the mucous membrane. Baldwin found a marked increase in calcium in the fifteen cases of cholelithiasis which upon examination showed acid or neutral bile. He considers the acid as a probable factor in the calcium formation. This is diametrically opposed to Herter, who considers a superalkaline bile a possible cause. Bacmeister believes that the calcium is present in the mucus, which is enormously over-produced in the catarrhal conditions of cholelithiasis. The calcium, he believes, unites with the bilirubin of the bile and is precipitated about the cholesterin nucleus.

*Rôle of bacteria in gallstone formation.* — The question of bacteria *per se* as a cause has been carefully considered; that is, whether bacteria in the gall bladder do not act as a foreign body and initiate a precipitation of cholesterin. Thus Cushing [17] has advanced the theory that bacteria agglutinate in the gall bladder, thus forming a nucleus for precipitation. He has further demonstrated agglutination of typhoid bacilli, obtained from gall bladders, by serum of typhoid patients.

Richardson [18] found large clumps of typhoid bacilli in the gall bladder of five out of six cases of typhoid in autopsy.

Cantari [19] has found that the agglutinating power of bile in animals immunized against typhoid, colon and influenza bacilli is considerable, but not so great as is the blood serum.

Numerous investigators have examined gallstones for bacteria, both by culture and stain. Gilbert and Dominici [20] observed that bacteria were almost always demonstrable in recently formed calculi. Fournier [21] obtained growths from the nuclei of 47 out of 72 stones examined. Further work of a similar nature has been done by Pratt,[22] Gilbert and Fournier, Dufort, and Blumenthal. The most recent investigation is by Funke,[23] who examined 102 calculi by stain and culture. He obtained positive cultures in 31 stones. The bacteria found were B. typhosus, B. coli communis (these two formed the great majority), but also B. lumbatus, B. gasoformans, B. oxygenes, B. Friedländer, B. lact. aerogenes, B. tenacatis, B. subtilis. The wide variation of organisms is interesting, but it must be remembered that the finding of bacteria in gallstones is not of great etiological significance, since they may penetrate the stone from without.

The way in which bacteria reach the gall bladder has not been demonstrated. The possible modes of infection are four in number:

I. Direct from the peritoneum.

II. By the blood from the cystic artery.

III. By the common bile and cystic duct from the duodenum.

IV. In the bile from the liver by way of the portal circulation from the intestines.

Most recent authors believe that the last is the most probable route. In support of ascending infection from the duodenum, Bond [25] has shown that there are reverse currents in the intestines and that indigo-carmine particles have been carried from anus to gall bladder, and this mode of infection has been advocated by many. The work of Lartigau [26] and others in recent years has led to a reversal of opinion, and Mayo [27] in a recent article considers the portal circulation the probable mode of infection.

Hewlett,[28] in discussing the question, sums up as follows: "Adami and Ford have claimed that there is a constant passage of bacteria through the mucosa of the healthy intestines; and bacteria in the blood may be excreted in the bile (Cushing). The bacteria causing a cholecystitis are often not those commonly found in the duodenum. The infection of the biliary passages above a ligature around the common duct could hardly come from an ascending infection. Finally, if an enteritis be caused by the administration of arsenic, etc., and if the animal be fed some easily recognized organism, such as the B. prodigiosus, this organism can often be demonstrated in the bile passages."

Considering these hypotheses as a whole, the following would be a picture of gallstone formation.

Since hypotheses and the experimental evidence agree upon the stagnation of bile as the most important predisposing factor to gallstone formation, the first step in the sequence will be a stagnation of bile caused by one of a number of possible causes. Thus, the patient would have suffered from gastroptosis, pregnancy or some

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condition mechanically hindering the free flow of bile; or, on the other hand, be a person of sedentary habits and chronic indigestion. While the above are the reasons usually given as the etiological factors of stagnation of bile, the mechanical problem seems more intricate than would be indicated by the general terms above mentioned. Further careful anatomical investigations should show some hitherto undemonstrated etiological factors.

In a large number of cases no preceding condition can be found except typhoid fever or chronic indigestion. So frequent is a history of indigestion with occasional pain obtainable in definite gallstone cases that it is quite possible that this is an etiological factor.

Since the contraction of the gall bladder is governed by a reflex established in the duodenum by the acid chyme, it is easily conceivable that a chronic catarrh of the stomach and duodenum might produce a reflex congestion of the mucous membrane of the gall bladder. As in a majority of cases of gallstone disease confined to the gall bladder, a sharp line of demarcation of the inflammation is observed at the opening of the cystic duct, it is probable that it is at this point, and not in the duct, that the obstruction occurs, through congestion and subsequent swelling of the mucous membrane. Such a congestion would not be caused by bacteria, but would afford a fertile field for bacterial infection through the bile. Apparently, there have been no experimental or autopsy findings to prove or disprove this theory.

An examination of the gall bladder in the pre-gallstone stage would show a somewhat enlarged bladder with a congested mucous membrane. The muscular coat would be rather atonic and thin from the infrequent contraction and interference with perfect circulation.

Examination of the contained bile would show desquamated epithelium containing some globules of amorphous cholesterin, these globules having been precipitated from the bile (Bacmeister) and reabsorbed by the cells (Aschoff) or being the product of the degeneration of the epithelium of the mucous membrane (Naunyn).

The bile would be sterile, but upon analysis would show an increased percentage of cholesterin and calcium, the former due either to the increased desquamation of epithelial cells or to some metabolic change in the body or liver, the latter due to epithelial desquamation and increased action of the mucous glands.

Such a gall bladder would give no symptoms. The next stage is that of beginning stone formation. In this stage the walls of the gall bladder probably remain as in the pre-gallstone stage. The contents, however, show a most interesting change. Detritus is much more evident in the bile. This consists of broken-down epithelial cells, held together by mucous, amorphous cholesterin (Bacmeister, Adami, Aschoff, Naunyn, etc.).

The exact chemical reaction by which these crystals are precipitated is still under dispute; according to Naunyn, they precipitate from the amorphous form by concentration; according to Adami, by the reaction of cholesteryl-oleate with alkaline bile salts; according to Kramer *et al.*, by an acid reaction of the bile which precipitates it from its union with the bile salts. The crystals have a tendency to unite, and gradually a small cholesterin stone develops. According to Bacmeister and Aschoff, this stone gradually increases in size by radial formation. According to Naunyn, the amorphous cholesterin forms a nucleus for the precipitation of bilirubin calcium which surrounds it. The bilirubin calcium is added layer by layer, but, while this is going on, amorphous cholesterin is infiltrating the stone from without through channels, and gradually replacing the bilirubin calcium, crystallizing out as pure cholesterin. In this way Naunyn believes the common mixed cholesterin-bilirubin-calcium stone is formed. In cases of pure cholesterin stone he believes the nucleus is encysted in a pocket of the mucous membrane and that the amorphous cholesterin gradually crystallizes about it, a stone thus forming. Bacmeister, as previously stated, has contrary views. Whether bacteria are present at the early stage of stone formation is another point upon which there is dispute; thus the upholders of the chemical hypothesis claim bacteria need not necessarily be present, but do undoubtedly accelerate the rapidity with which the stones form. The upholders of the mucous membrane hypothesis, on the other hand, claim that bacteria are absolutely necessary, and in experimental work no gallstones have been produced except in the presence of bacteria. It is necessary to conceive, therefore, that bacteria absorbed from the intestine are excreted in the bile, and that they lodge in the congested mucous membrane of the gall bladder. Here they establish a catarrh with an enormous increase in the mucous glands (Adolf Muller); with this there is an increase of mucus tending to cause a precipitation of calcium and a change of reaction of the bile, and increased necrosis and desquamation of epithelial cells, resulting in cholesterin formation.

The next stage is the stage of development of gallstones.

All the classical conditions for cholelithiasis are now present. The gall bladder, enlarged and relaxed, presents a chronic catarrhal inflammation of the mucous membrane, with atony and thinning of the muscular coat. It is filled with stagnant bile supersaturated with cholesterin and calcium. One or more stones in varying stages of formation may be seen. These stones are soft and readily take impressions from their neighbors and from the contractions of the gall bladder. The contraction occurs from time to time normally, as an effect of the inflammatory condition, or in an effort to expel the foreign bodies. A gradual increase in size and number of the stones takes place during this stage, and their presence accentuates the catarrhal condition of the mucous membrane. At any time the inflammation may become acute, due to a blocking of the already partially obliterated opening into the cystic duct, or to an increase in virulence of the bacteria.

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Such exacerbations are more frequently the cause of pain than the passage of a stone into the cystic duct (Moynihan). In fact, most recent authors believe the pain of cholecystic gallstones is due to acute infection rather than mechanical passage of stones. An obstruction, interfering completely with the outflow of bile and consequent drainage of the gall bladder, however, may be due to a stone which acts like a ball-valve in the neck. In this condition there results a typical attack of colic lasting until the stone drops back into the bladder and drainage is again established. Thus at any time, the simple catarrh may change into an acute infectious cholecystitis with the resulting pathological changes. The consideration of the further increase in size and number of stones with the remarkable changes they may effect upon the gall bladder and other organs belongs to the realm of pathology and not to the pathogenesis of cholecystic gallstones.

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## A FALLACY IN PSYCHOTHERAPY.

### "Fighting it Out" in Functional Nervous Disorders.

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It is interesting to observe the gradual evolution of knowledge through which exact science comes to elucidate the facts of empirical observation. For centuries accomplished diners were convinced and acted upon their conviction that good appetite is a condition of good digestion; lately Professor Pawlow has proved that they were right. In another way, those who had much clinical experience of smallpox believed that red light was in some manner beneficial; within recent years we have learned that this is, in fact, the truth. And so it is in a large number of instances — the practical man is doing things aright long before the scientific man tells him the precise reasons for his action.

In the sphere of the mental life, saint and sinner have long since realized, and some of them have written it down in books, that spiritual conflicts within themselves are fraught with most disagreeable and, not seldom, disabling consequences. It has remained for abnormal psychology to show us somewhat of the mechanism of these conflicts and in some instances to assist us in preventing or removing their baneful effects. As determining our attitude toward functional nervous conditions, this more recent knowledge has contributed much, not perhaps as much as its more ardent disciples proclaim, but nevertheless sufficient to make our orientation within this nervous labyrinth a little more secure. We have learned, as the result of contemporary research, that possibly some of our common advice to patients has been based upon this or that psychological fallacy. Of one of these I desire to speak, namely, the fallacy of "fighting it out" in functional nervous disorders.

There is no occasion for surprise that where interest is so universal and the object of it so obscure, a multitude of opinions should be entertained concerning the true or best methods for treating various nervous affections. But if fallacies have crept in, they ought to be recognized, for fallacies are dangerous things; theoretically they may do no harm, but practically they are elements of discord which may disturb the otherwise harmonious course of our endeavors.

If we should happen to ask any one of our patients who at the time is troubled with what commonly goes by the name of nervous exhaustion, or hypochondria, or obsessions, or some form of depression, what he is doing about his many fears, anxieties and perplexities, he will inform us quite naturally that he is doing the best he can to "fight it out." That surely ought to be a brave thing to do, and so it is. But if we further inquire how he is succeeding in his fight, he will almost certainly tell us that things are not well with him, for otherwise he would not be consulting us at all. Despite his most determined efforts to bring the contest to some definite conclusion, nevertheless it seems well-nigh interminable. You will agree with me that there is no more pathetic spectacle than that presented by the man who has employed his time and his energy for months, perhaps for years, in this fruitless struggle, and has reaped as his reward nothing save discouragement and, in some cases, what looks suspiciously like despair. And yet I believe such a man may travel a road that leads to some measure, at least, of success.

By way of illustration let me ask you to indulge a quotation from Mr. Arthur Christopher Benson's suggestive volume, "The Altar Fire." Herein one may read:

"There is a story of a Cornish farmer who, returning home one dark and misty night, struck across the moorland, every yard of which he knew, in order to avoid a long tramp by road. In one place there were a number of disused mine-shafts, — the railing which had once protected them had rotted away, and it had been no one's business to see that it was renewed, some few had been filled up, but many of them were hundreds

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of feet deep and entirely unguarded. The farmer first missed the track and after long wandering found himself at last among the shafts. He sat down, knowing the extreme danger of his situation, and resolved to wait till the morning, but it became so cold that he dared stay no longer for fear of being frozen alive, and with infinite precautions he tried to make his way out of the dangerous region, following the downward slope of the ground. In spite, however, of all his care, he found suddenly, on putting his foot down, that he was on the edge of a shaft and that his foot was dangling in vacancy. He threw himself backwards, but too late, and he slid down several feet, grasping at the grass and heather; his foot fortunately struck against a large stone, which, though precariously poised, arrested his fall, and he hung there for some hours in mortal anguish, not daring to move, clinging to a tuft of heather, shouting at intervals, in the hope that, when he did not return home, a search party might be sent out to look for him. At last he heard, to his intense relief, the sound of voices calling him, and presently the glare of lanterns shot through the mist. He uttered agonizing cries and the rescuers were soon at his side, when he found that he had been lying in a shaft which had been filled up and that the firm ground was about a foot below him, and that, in fact, if the stone that supported him had given way, he would have been spared a long period of almost intolerable horror."

Now in this Cornish farmer we have a striking example of what I shall call the pugnacious attitude, the attitude, namely, which impels to an active campaign, inasmuch as it leads its adherents to "hold on," and, in the case of nervous people, constantly to try conclusions with their abnormal mental states. Let us approach this attitude somewhat critically and endeavor to determine its practical value. It will not be denied that the first step in the direction of nervous instability is introspective analysis, and Ribot is right when he remarks: "The healthy, normal man suffers himself to live physically and morally without studying himself and without watching himself live, at least any more than is necessary. But the moment the demon of analysis has entered into us, we do not know where it may lead us; an absolute tyrant, it will one day remain sole master of the place. Even under its feeble form it is the first stage in morbid evolution. The inevitable outcome of this tendency to analysis, so soon as it has passed a certain point, is mental disaggregation. The majority of people, either by strength or by feebleness of intellect, by luck or ill-luck, by a simple and limited life or by incapacity of attention to maintain it, escape this tendency. But if there are many who escape the ill-effects of mental analysis, there are also many who suffer seriously from the wounds this tendency inflicts." Among those who suffer most intensely are nervous people, the evil genius of whose existence is a morbid subjectivism. Every typical neurotic is so constantly and, I was going to say, so exclusively interested in the manner of his living that he suffers a corresponding contraction of interest in life itself. Such a man does not — it is too much to say that he cannot — read without considering whether it is going to fatigue his brain; he eats nothing without watching the process of digestion; if he takes a walk he fears he will overfatigue himself; bathing fills him with the apprehension of catching cold; in bed he is forever listening for his heart-beat, and when about during the day his finger is frequently feeling for his pulse; in a word, he does nothing without a magnified self-consciousness. Here, if there be such a thing, is a truly exaggerated ego. So contracted has his mental horizon become, so atrophied his interest in everything except his own sensations, and so pessimistic his outlook upon life, that he actually ceases to be a useful member of society, and becomes a burden to himself if not to his friends as well. He has replaced the extra-spection of normal living by the intro-spection of neuroticism.

Now to advise, or even to permit, a man of this temperament to "fight" his condition, which is simply another way of inviting him to continue his morbid intro-spection, seems very much like requesting the moth to get into the flame. For if we are to have a genuine fight, assuredly we must have some place to fight and some one to do the fighting. In this particular instance the battle-ground must, of necessity, be within the mind of the patient, and the contestants, his will on one side and his emotions on the other, with his intellect wavering in its allegiance, inclining now to one side and now to the other. And remember, this can be no half-hearted contest, — there is too much at stake; it must theoretically be a fight to the finish, only practically the weary patient finds that for him, at any rate, there is no finish, and that after weeks, months, years, perhaps, of struggle, he is but going round and round like a squirrel in a cage, while his strength and, more especially, his courage have suffered undesirable depletion. I have known a young man, holding a position of trust in a banking house, who left his employment and his very young family on account of a moderate nerve exhaustion, which was accompanied by the usual depression and morbid fears, and who went into the woods of Maine for the purpose of "fighting it out," because he had several times been strongly advised that such, no doubt, was the proper method to pursue. In four months he returned worse than before, and virtually a slave to his magnified fears and abnormal sensations. It cannot turn out otherwise on the pugnacious principle, for is not the primary psychological difficulty a morbid subjectivism? And what is "fighting it out" but a continuous, systematic, deliberate perpetuation of this same subjectivism? since, obviously, one cannot fight something unless one is conscious of it, sets it before the mind and keeps the attention more or less fixed upon it. To fight is to hold on; it is to cling in desperation, as the Cornish farmer did, to the mental grass and heather, with the solid earth only a foot beneath.

The plausibility of the pugnacious attitude receives a certain confirmation from the rugged

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reasoning of the man in the street, but it is not difficult to show that this reasoning is vitiated by a fallacy, namely, the inveterate fallacy of picture-thinking, by which I mean the universal habit of describing things of the mind in terms of physical objects of sense, and then mistaking such descriptions for mental realities. We all do it, but that is precisely why we should be on our guard against it. The fighting attitude has arisen in some such way as this: If my neighbor Jones annoys me by trespassing upon my private grounds and shooting my game, it is entirely possible for me to terminate this annoying situation by the primitive method of a fight with Jones, during which fight I may put an end to his physical ability to trespass again upon my land. The matter is settled once and for all by the physical elimination of Jones. But observe now what happens when the attempt is unconsciously made to apply this reasoning to processes within the mind of a neurotic person. The analogy, like many another analogy, cannot be made to fit. The morbid ideas and fears which annoy my patient by their intrusion upon the course of his thoughts are not physical things, to be dealt with by the summary method of annihilation, for it is impossible *directly* to strangle or shoot or punch an idea out of existence. So impalpable are they, so elusive and so tenacious of life, that, even when apparently banished for good, they have a disagreeable habit of turning up again at the most inopportune times and in the most trying situations. And accordingly, even though the patient may have fought and have been awarded a prize upon numerous occasions, the contest is by no means ended; the same fruitless, dreary fight must be continued as often as a rebel thought gives him challenge. But it may be objected, while this is all very well and even, in its way, quite plausible, still it is more or less reasoning *a priori* and may have no foundation in actual fact. Well, then, let us observe what experimental psychology has to say in the matter. Through a number of valuable and, in some sense, epoch-making researches, carried on within recent years, we have come into possession of a vastly more comprehensive knowledge of the factors at work in the production and maintenance of different states of psychological instability. It is perfectly true that there are large and serious lacunæ in our knowledge, but sufficient headway has already been made to enable us more intelligently to steer our course in the treatment of many nervous disorders.

Some of the most valuable and quite the most illuminating of this work we owe to Dr. C. G. Jung, of Zürich, whose researches into the problems of association have opened an entirely new and, let us hope, fertile field to students of mental life. Experimenting with a considerable number of persons, Jung discovered that there are certain associations of ideas which liberate a marked emotional wave, and certain others which produce little or none. The experiment is carried out in this fashion: I announce to you, one by one, a series of words, forty-five or fifty, for example, and request you to speak out immediately the first word, which stands, of course, for the associated idea, that arises in your mind. This is your association for the particular word given you. By means of a stop-watch I measure the time that elapses between the moment of my announcing the test word and your speaking the associated word, this time being termed your reaction-time. Now it has been found that for ordinary words, not specially significant, each individual has an average reaction-time, which varies within moderate limits. The following is the abridged record of an experiment to determine average reaction-time:

| Stimulus word. | Reaction word. | Reaction-time. Seconds. |
|---|---|---|
| Book. | Poems. | 1.5 |
| Bridge. | Water. | 1.3 |
| Man. | Father. | 1.4 |
| Winter. | Snow. | 2.0 |
| Food. | Bread. | 1.2 |
| To walk. | Country. | 2.1 |
| City. | Providence. | 1.0 |
| Hat. | Derby. | 1.4 |
| Rubbers. | Rain. | 1.5 |
| Flowers. | Roses. | 2.0 |

The average reaction-time for fifty words was 1.4 seconds.

Having determined the average reaction-time for this particular individual, let us now study another series of associations with the same individual.

| Stimulus word. | Reaction word. | Reaction-time. Seconds. |
|---|---|---|
| Bird. | Poe's Raven | 1.4 |
| Woman. | Mother. | 1.7 |
| Sleep. | Dream. | 5.2 |
| College. | Yale. | 1.2 |
| Star. | Comet. | 7.0 |
| Country. | Cows. | 1.8 |
| Paper. | News. | 6.5 |
| Philosophy. | Zeno. | 1.3 |
| To swim. | River. | 1.5 |
| Astronomy. | Telescope. | 1.6 |

Here, it will be observed, were three lengthened reaction-times: Sleep, dream, 5.2; star, comet, 7.0; paper, news, 6.5. What do these signify? According to Dr. Jung and his followers, they mean that the association of ideas aroused by the stimulus word was of such personal and significant interest to that individual as to give rise to an accompanying emotional state which interfered with the rapidity of association, which blocked it, as it were, and caused a lengthening of the reaction-time. Lengthened reaction-time means, therefore, the presence of some disturbing emotion.

Upon inquiry I was interested to learn that the cause of the above lengthened reaction-times was this: The young man, having read an account of comets in a popular magazine, became obsessed by the idea that a *comet* was likely to strike the earth and to cause enormous damage. He had experienced a very vivid *dream* about it, and was continually apprehensive that at almost any time he might read in the *newspaper* an account of the comet's having actually fallen. Accordingly, when the ideas, "sleep," "star," "paper," were presented to him, they aroused emotional states which obstructed the customary and equable

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flow of his mental processes and gave rise to a certain degree of psychological instability. During a course of psychotherapy the disturbing emotional complexes were removed, and when this had been accomplished the obsessions disappeared completely. Three years have passed and they have not returned. Doubtless these subconscious emotions will in the future prove to be most important elements in the composition of various nervous disorders. And incidentally it may be of interest to remark that by means of the lengthened reaction-times for certain of their associations, some criminals have been detected and have confessed to crimes which previously they had denied before being confronted with the evidence obtained through the methods of experimental psychology.

More interesting, perhaps, than even the associations themselves are the changes in the electrical resistance of the body during the formation of an association carrying with it a distinct emotional load. This phenomenon is known to psychologists as the psycho-physical galvanic reflex. A constant current from one or two cells is allowed to pass through the body by way of the hands or feet, which rest upon large copper plates, and in the circuit of this current is arranged a mirror galvanometer of Deprez-D'Arsonval for the purpose of measuring the quantity of current flow. By means of an ingenious device the variations of the current-flow are registered by a recording pen upon a revolving drum, and hence it is possible to keep a record of the variations of electrical body resistance for a considerable period of time, the record appearing as a tracing marked by the pen upon the paper surrounding the drum.

Let us assume that, with everything arranged for the experiment, we throw on the current and observe what occurs. While the subject of the experiment sits quietly and breathes easily we notice that the quantity of current passing through his body oscillates slightly about a certain mean. Suppose, now, that we announce to him a word which will arouse an association with a personal interest; what will happen? Immediately, or very shortly, the galvanometer will indicate that more current is passing through his body, while the recording pen will trace on the drum a deep oscillation to accord with the altered current flow. In this manner we may demonstrate to the satisfaction of any one that a mere word which sets off an emotion produces a perfectly measurable electrical change; and, however remarkable it may seem, it is none the less a scientific fact that a simple word is so potent as to lower the electrical resistance of our bodies.

My purpose in thus briefly describing these interesting experiments is to show the profound influence of certain associations of ideas upon our emotional stability. If, then, it is demonstrably true that simply to inaugurate a disagreeable emotional complex is sufficient to produce some degree of nervous instability, it would seem but a logical extension of the argument to maintain that the constant stimulation of such complexes in the process of "fighting it out" is a psychological blunder. I know of no experiments of the sort, but were it possible to test the galvanic reflex while a nervous person was actually in the process of "fighting" his condition, it is not unreasonable to suppose that positive changes in the organism would be brought to light. And such changes would scarcely be conducive to mental and physical stability.

Against the militant attitude a further objection may be raised. Utilizing the method originated by Pierre Janet, and further elaborated by Breuer and Freud, we have learned that the effort to crowd out of mind, to suppress, the memory of a disagreeable experience or set of experiences, in a word, to "forget it," is oftentimes the source of troublesome nervous disorders. A young girl, for example, because of her attempts to smother the memory of a disagreeable experience, may find herself later on the victim of a severe attack of hysteria with all its mental and physical disabilities. And not until this smothered experience has been brought out into the light, not until it has been somehow assimilated, will such a girl return to her former health of mind and body. A greater or lesser degree of nervous instability is the price we pay for trying to smother and to forget our unacceptable experiences.

That this is not extraordinary any one may prove out of his own personal experience. There is scarcely one of us, I suppose, who has not at different times endeavored by main force of will to crowd out of mind some disagreeable experience of the past, some anxiety or sorrow or fear, and in so doing has been conscious mainly of two things: first, the absolute futility of the effort; and, second, its disturbing influence upon tranquility of mind. We have not only not succeeded in our struggle, but we have made a bad matter worse. And if this is true of normal individuals, how much more true must it be of those who are nervously unstable, who have not the toughness of moral fiber to withstand this constant struggle with its interminable failures, and whose physical and mental salvation is imperiled through no fault of their own, but because of the fundamental inadequacy of their method. To maintain a state of conflict within one's own mind is to prevent that unselfconsciousness so essential to mental health.

Most strikingly is this illustrated in the case of the religious consciousness. For those who have passed through personal religious crises, which represent some of the most intense intellectual and especially emotional experiences, the fierce struggle within their souls has been a most fruitful source of discontent, unhappiness and even, at times, of misery. A correspondent of the late Prof. William James writes the following statement: "Life seemed difficult to me at one time. I was always breaking down, and had several attacks of what is called nervous prostration, with terrible insomnia, being on the verge of insanity, besides having many other troubles, especially of the digestive organs. I had been sent away from home in charge of doctors, had taken all the

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narcotics, stopped all work, been fed up, and, in fact, knew all the doctors within reach. But I never recovered permanently until this New Thought took possession of me. I think that the one thing which impressed me most was learning the fact that we must be in absolutely constant relation or mental touch (this word is to me very expressive) with that essence of life which permeates all and which we call God."

Here, then, was a woman who, having tried the pugnacious method without avail, finally surrendered, and, by giving up, came into possession not of spiritual riches merely, but of nervous health as well. I have no intention, of course, to convey the idea that in every case an appeal should be made to the religious consciousness; I wish merely to elucidate a principle. When, however, religion is a living force in the life of an individual, I see good reasons why it should become a means of emancipation from the slavery of many fallacious thoughts and morbid emotions.

The power of the religious idea as a psychological aid toward terminating the fighting attitude may be illustrated by a further example. A young woman, following a severe railroad accident, had become practically a prisoner in her own home because of an ever-present fear of going upon the street. Every sort of effort and appeal had been made without success until one day the pastor of her church called to see her and produced a somewhat unexpected result. During his visit the clergyman conversed with her about her unhappy condition, and, during the conversation, he asked her whether or not she professed to be a Christian, to which she gave an affirmative answer. "My dear young woman," replied her friend, "you aren't a Christian at all; you are a pagan. You ask me why. Well, I will tell you plainly. Look out of the window and behold the sun, and the trees, and the flowers, and the birds — all of these things were made by God for the comfort and happiness of his creatures. He made them for me and for you, and yet you who so ardently profess to be a Christian, who pray, and pretend to believe in the protecting Providence of God, are afraid, literally afraid, to trust your God; you are afraid to go out of this house which God gave you, into the street which God made, too. I say that whatever you may profess on your lips, in your heart you are a pagan!" So powerful was the leaven of these words, in this instance, that in not more than two weeks from the time they were spoken the young woman had given up "fighting it out," and, by letting go, had won a complete victory over her fears. I do not know whether they ever returned.

But aside from religion, this same attitude of surrender may be attained through an appeal to a commonsense philosophy, such philosophy, for example, as sustained Epictetus, and Marcus Aurelius, and Seneca in his letters to Lucilius. It is not so much drugs that many nervous people need; it is a practicable philosophy of life, — one that will enable them to enter more courageously the dusty arena where men and women are fighting the perplexing problems of life. Many nervous people have been nurtured, unconsciously, no doubt, to a certain effeminacy of emotion. They require to be always comfortable and to have their feelings swathed, as it were, in cotton. A certain amount of worry is inseparable from any active life; to accept such worry philosophically is worth more than all the efforts in the world to banish it by trying to "fight it out." Practical psychotherapy, whether it employ suggestion, persuasion, psycho-analysis, hypnoidization or other procedure to compass its purposes, has always in view the removal of inner conflicts which harass the harmony of normal existence.

"This attitude of surrender is all very ideal and very utopian; it belongs to the class of things that are important, if true," some one may say. "But the plain, stubborn, everyday fact is that these unhappy neurotics would all surrender, they would all let go, if they could, but, as it happens, they cannot." Here, then, we come upon the very root of the whole matter. The nervous person says, "I cannot let go," which, more accurately stated, would be, "I do not let go because I have never been taught how to do it."

In order that we may put this idea of surrender to what the late Professor James would call "a pragmatic test," let us return to our Cornish farmer and inquire how the hypothesis actually "works." You will remember that this unfortunate man kept clinging in absolute horror to the grass and the heather until a certain point of time, — that moment, namely, when the rescuers arrived to lend their assistance. You recall also that the occasion of his clinging at all was the fact that because of the intense darkness he could not *see*, and, therefore, did not *know*, that the firm ground was but one foot beneath. When the light of his rescuers' lanterns disclosed it to him, like a sensible man he let go and went home, although, left to himself, he would have continued to hold on as long as his strength endured.

Now the predicament of this poor farmer is precisely analogous to that of the average nervous man or woman. The farmer was in darkness, which meant ignorance; so, likewise, is the neurotic, because of his lack of knowledge of the true meaning and value of his myriad morbid ideas, sensations and emotions. Like the farmer who, without knowing, assumed an empty shaft, he assumes a catastrophe in every symptom, and in his efforts to crowd his fear out of mind, to "fight it down" and to keep the lid upon it, he succeeds merely in setting up within himself a constant turmoil of anxiety and depression. Left to himself, he can do little or nothing to solve the recurring riddle.

It is here, I believe, that the trained and sympathetic physician finds the opportunity of his greatest usefulness and becomes a practical necessity. He should be a man who brings the light, who can mediate between science and life; and as the farmer put his foot upon solid ground when the lanterns of his rescuers allowed him to see that it was really there, just so many a nervous sufferer will relax his hold upon his fears when his

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physician reveals to him the truth which here as elsewhere shall set him free. When his errors of fact and especially of inference have been pointed out to him, the neurotic, so far as I have seen him, assumes the "will to believe." The problem, then, takes the complexion of educating him out of the habit of fight into one of surrender; a surrender, be it carefully noted, based not upon a mere dogged effort of will, but upon *knowledge* which is power, and which discloses the complete futility of the contest. Not always, indeed seldom, is it an easy task, this metamorphosis of a man's personality, but when it is pursued with intelligence and persistence, it is certain to attain to some degree of success. It is assumed that the Cornish farmer felt stiffness and perhaps some pain in his arms for days as the result of his clinging to the grass and the heather; and in neurotic people it is expecting too much of them to suppose that they will feel no trace of the fight, even if they have surrendered. Not all patients respond to treatment of this or of any sort; nor can we physicians altogether prevent the onset of future fears and anxieties which will take the place of those we have helped to banish, for it is much as Francis Thompson says,

> "Nothing begins, and nothing ends,
> That is not paid with moan;
> For we are born in other's pain,
> And perish in our own."

## SPONTANEOUS DISLOCATION OF THE HIP-JOINT FOLLOWING ACUTE INFECTIOUS DISEASES.*

BY CHARLES GREENE CUMSTON, M.D., BOSTON.

SPONTANEOUS dislocation is an infrequent sequel of various infectious processes, but of all the joints in which this can take place, that of the hip is certainly most common.

This complication has been known for a long time, but it has only been examined scientifically within the last twenty-five years. In 1722 the famous J. L. Petit published his important work on dislocations, in which he endeavored to prove the theory of hydrops as the causative factor for the dislocation. In 1835, Parise upheld the conclusions arrived at by Petit, over a hundred years before, by means of experimental work on the cadaver. A number of other writings were published, so that Helwig, in 1856, was able to collect twelve cases of post-typhoidal dislocations. One year later, Roser published an exhaustive study, and since then much attention has been given to the question, and many cases have been put on record. Keen collected thirty instances of post-typhoidal dislocation in 1877, while in 1883, Verneuil drew attention to the part played by the muscles in the production of dislocation from a study of several cases of post-rheumatic luxation. The most extensive articles which have appeared on the subject are due to Kummer, who collected fifty-one instances, and Degez, who compiled seventy-four cases of spontaneous dislocation of the hip-joint. Very little attention has been given to the subject in the recent treatises on surgery, so little, in fact, that even in Keen's Surgery, in five volumes, only about a page is devoted to spontaneous dislocations in general and nothing to that of the hip in particular.

The following is the history of a case recently under my observation.

J. H. W., nine years of age, female, had a rather severe scarlet fever in March, 1910. She had always been a healthy child, her locomotor system being perfectly developed. She had never been ill since birth until the scarlet fever. She was in bed for six weeks and finally convalesced, there being no visceral complications. When she began to walk, in the latter part of May, it was noticed that she had a decided limp and that the right leg was considerably shorter than its fellow.

We saw the patient on May 27, at which time the following notes were made: The patient was a well-developed girl, with excellent muscular development. Careful examination of the thorax and abdomen, likewise the urine, was absolutely negative. By measurement, the right leg was found 4 cm. shorter than the left; it was in marked adduction, with internal rotation, which caused the patient to walk with marked limping. The motions of the right hip-joint were considerably interfered with, rotation and flexion being almost entirely absent. The trochanter major was found 4 cm. above the Roser-Nélaton line. There was no pain on pressure, nor were there any other objective symptoms, so that a diagnosis of iliac dislocation of the femur following scarlet fever was made.

Extension, in order to reduce the shortening and to improve the position of the limb, was first resorted to and carried out for five weeks, but as little or no improvement resulted, it was decided to attempt reduction of the dislocation under narcosis, which was done on July 3. After considerable manipulation the head of the femur was made to enter the acetabulum and the reduction was found to be complete. A plaster cast was applied, the limb being placed in abduction, with extension. The extension was kept up until Aug. 17, at which time the cast was removed, when, other than the muscular atrophy, the joint was found in good condition. Electricity and massage completed the cure, so that at present (Sept. 2) the patient is quite well, the functions of the limb being perfectly restored.

In discussing the etiology it is striking how frequently the hip-joint is the seat of spontaneous dislocation, and out of eighty cases collected by Degez, the hip-joint was involved seventy-four times, the shoulder three times, the knee twice and the elbow only once. Perhaps this frequency may be in some way due to the youth of the patients, because it is well known that the hip-joint has a great tendency to the development of pathologic processes in early life, and of ninety cases which I have been able to gather, in only eleven was the patient over twenty years of age. The type of dislocation was iliac eighty times, obturator dislocation six times and perineal dislocation once.

By far the most important causal factors for the development of spontaneous dislocation are typhoid fever and acute articular rheumatism. Then, in order of frequency, come scarlet fever, influenza, smallpox, gonorrhea, erysipelas and

* Presented at the Sixth French Congress of Gynecology and Pediatry, Toulouse, France, Sept. 22–27, 1910.

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puerperal fever. In a few instances the causal factor could not be ascertained with certainty. In the cases I have collected the causal factor was as follows: Typhoid fever 34, acute articular rheumatism 28, scarlet fever 15, influenza 4, smallpox 3, gonorrhea 2, erysipelas and puerperal fever, of each 1, while in three others the cause was not determined.

The dislocation usually takes place during convalescence and is particularly apparent in typhoid fever, while in acute articular rheumatism and scarlet fever the complication is prone to occur during the progress of the disease.

Although there is no doubt as to the relationship between spontaneous dislocation of the hip and acute infectious diseases, the mechanism of its development is as yet insufficiently explained. The pathogenesis of spontaneous dislocation has always been rather a puzzle, and for this reason there are several theories which are more or less logical. Petit's theory, advanced in his work already referred to at the commencement of this paper, is that all spontaneous dislocations arise from an effusion of fluid into the cavity of the joint. He believed that the capsule became distended on account of the intra-articular fluid, that the ligaments became softened and lax, and that the head of the bone was pushed from the joint cavity on account of the hydrops and thus resulted in dislocation. This theory was supported by the experimental work of Parise, who injected liquid into the hip-joint of cadavers, and the same result was invariably attained, namely, that great distention of the capsule, with a posterior dislocation, took place. Parise, therefore, came to the conclusion that the structures of union of the joint became lax to such an extent from stretching of the ligaments that the head could be forced out of the acetabulum.

Roser agrees with this theory, which he tries to prove by pointing out that there is no evidence of either acute or chronic inflammatory processes in the cavity of the joint, and also because, in the reported cases, there is no history of trauma or blood extravasation. He, therefore, concludes that the only explanation for spontaneous dislocation is an intra-articular fluid collection causing marked distention of the capsule. Now, in point of fact, in quite a number of cases a hydrarthrosis has been found at operation, and from this there had resulted a distention and softening of the capsule, with separation of the head of the femur from the acetabulum.

It is easy to conceive that the effusion is important for the occurrence of the dislocation, and it is hard to understand why some writers have attributed the ability of preventing dislocation to this effusion. Whether or not hydrops of the joint is alone sufficient to explain the production of a dislocation is rather doubtful. Kummer is of the opinion that the fluid can at most force the head of the femur to the rim of the acetabulum, and in order to force it over the rim he believes that there must be some other external influence, slight as it may be. He also points out that the amount of fluid contained in the joint is so small that it can hardly be the only causal factor in the production of the lesion.

Verneuil and Reclus endeavored to explain the occurrence of spontaneous dislocation by abnormal muscular contraction with paralysis and atrophy of the antagonists. In iliac dislocation particularly, they attributed the following mechanism: Before the dislocation takes place the leg is in a position of flexion and adduction, so that the resistance of the acetabulum is very greatly diminished. The structures which especially tend to prevent the exit of the femoral head from the acetabulum are the capsule and the muscles. If the former becomes stretched and relaxed, and if the pelvi-trochanteric muscles lose their tone by atrophy, the contraction of the antagonistic adductors can raise the head over the rim. Therefore, three factors must be combined in order to produce a spontaneous dislocation, namely, (1) a bad position of the limb, particularly favoring the functions of a group of muscles; (2) atrophy and paralysis of the antagonist; and (3) relaxation of the capsule and ligaments. This theory, however, is not satisfactory because there usually must also be some external cause in order to produce a dislocation. Then there are those cases which would be very hard to explain by the muscular theory, in which iliac dislocation does not occur and instead an obturator position is found.

Graff has called attention to the obliquity of the upper rim of the acetabulum as a possible explanation for the development of the spontaneous dislocation, and he also emits the opinion that there may, possibly, be a congenital tendency. Possibly the obliquity may be the result of a slight intra-articular inflammatory process, and Roser has mentioned the occurrence of pressure atrophy occurring on the posterior rim of the acetabulum as a result of incorrect positions of the limb, but he has only considered this as an etiological factor in a few cases. Graff, contrary to Roser, basing his assertion on a number of cases which he personally observed, considers the obliqueness of the roof of the acetabulum as characteristic in all cases of spontaneous dislocation, and believes that its mechanism may be explained from this anatomic change.

It has already been pointed out that, besides these predisposing factors, the nature of which has given rise to much difference of opinion, only a relatively slight trauma is necessary to produce dislocation, and there are numerous recorded cases to demonstrate this fact. In Capelle's case the dislocation occurred during the transportation of the patient from one bed to another, and this has been observed by several other competent observers. It would seem to me that Kummer has very appropriately summarized the pathogenesis of spontaneous dislocation of the hip in a few words, namely: "Secondary dislocation, although being prepared by internal causes, requires, just as in ordinary traumatic dislocation, the production of some violence as an effective cause, and the pathogenic difference principally resides in the degree of the latter."

The study of the pathologic changes has of

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late made considerable progress, as they have been directly studied at autopsy. These changes refer to the ligaments, the joint and its contents, the surfaces of the joint and the muscular structures. In contrast to traumatic dislocation, in which there is always rupture of the capsule, in a spontaneous type there are only slight changes present in the joint ligaments. In most instances there is only softening and distention of the capsule, while it may also present some increase in thickness. In several recorded cases there was a marked thickening of the anterior wall of the capsule, while in another case the increase in thickness was found on the posterior wall, and the ligamentum teres was stretched. Besides these slight changes there are some recorded cases in which it would appear that rupture had taken place, likewise that of the ligamentum teres, and in one case where the lesion was due to gonorrhea almost the entire ligamentum teres was destroyed. No trace of either the capsule or the ligament could be found by Payr at operation for a post-rheumatic dislocation.

The nature of the contents of the joints has been the cause of much discussion. Hueter believes that all spontaneous dislocations of the hip-joint are due to the presence of a purulent infection, and his opinion has been upheld by Weil and Voelkel because they found pus in the joint of a post-typhoidal dislocation. I am only aware of one other similar case, this being published by Bonnet. In all other cases where a collection was found, it was either serous or serofibrinous. The question has also been much discussed as to whether or not an inflammatory process in the joint occurring during acute infectious diseases is or is not caused by the specific organism of the disease. The question is not settled, but a case recorded by Graff is interesting in this respect. It was that of a patient with a post-typhoidal hip-joint dislocation in which an abscess burrowed to the surface in the adductor region eighteen months after the typhoid, and in the pus the living typhoid bacillus was demonstrated beyond a doubt.

The joint surfaces are, on the whole, only slightly changed, and in many cases they have been found apparently normal. Other cases have been met with in which cartilaginous outgrowths on the head of the femur were found during arthrotomy, in a case of post-rheumatismal dislocation by Lücke; Eisendraht found the cartilaginous covering of the acetabulum eroded, while in Degez's case there were cartilaginous bodies on the head of the femur and in the posterior upper portion of the glenoid cavity. In all these instances the head of the femur had retained its normal shape and was of firm consistency. There are also a number of other cases in which a marked overgrowth of cartilage was found. In Payr's case the femoral head was atrophied and covered with hard excrescences and was connected with the ilium by a typical nearthrosis. The latter presented a comb-shaped ridge of bone from two to three centimeters in height.

If the dislocation is not soon reduced, connective tissue will soon fill up the glenoid cavity, and many such cases have been recorded. Then, again, sloping and flattening of the upper rim of the acetabulum may occur. Muscular atrophy and contraction have been found in a number of operations, and Kummer found the greater gluteal muscle as thin as paper. In these cases the contraction first affects the adductors. This may be either a reflex contraction, disappearing in narcosis, or it may be of organic nature, and can only be corrected by tenotomy. In one of Graff's cases the muscles were partially ossified.

We may thus briefly summarize the most important pathologic changes occurring in spontaneous dislocation of the hip as follows: (1) Comparatively slight changes in the joint, especially over the femoral head; slight cartilaginous outgrowths in the glenoid cavity; (2) connective tissue overgrowth in the glenoid cavity; (3) sloping or flattening of the roof of the acetabulum; (4) muscular atrophy with contraction of the antagonists.

The symptoms of spontaneous dislocation of the hip are quite the same as in the traumatic type, namely, disturbances of function, displacement of the trochanter major, a depression in the normal region of the femoral head, the latter being found in an abnormal place. Pain is particularly evident in the post-rheumatismal form, a fact that has been denied by certain observers. Kummer had one case of post-rheumatismal dislocation in which there was a sudden and great increase in pain when the dislocation took place, but, nevertheless, too much reliance must not be placed on this symptom, as it may be wanting. What is more characteristic of spontaneous dislocation is that the lesion is first discovered only when the patient resumes walking. Of course, in doubtful cases the x-ray is to be used.

The prognosis depends upon the length of time the dislocation has existed, because when discovered early it may frequently be reduced, otherwise this is with difficulty accomplished, or even not at all. The inability to reduce the dislocation is due to the pathologic changes which have taken place, especially nearthrosis and ankylosis of the head, filling up of the glenoid cavity with fibrous tissue, and atrophy and contraction of the muscles. It is probable that these various changes do not take place as rapidly in the spontaneous as in traumatic dislocation, because in the former the irritative process due to the trauma are lacking. Consequently, for this reason the prognosis of the spontaneous type may possibly be somewhat better than in the traumatic form. It should be pointed out, however, that in some cases of spontaneous dislocation reduction could not be accomplished two months later, whereas Dittel was able to successfully reduce the femur in his case five months after the dislocation had occurred. Schoemacker has published a case where, after thirteen years, he successfully reduced a spontaneous hip dislocation without being obliged to resort to operative measures.

The treatment should, of course, in the first

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place be preventive, but on account of the great infrequency of this complication it would certainly be unnecessary to be on the watch for its occurrence in every case of acute infectious disease. On the other hand, particularly when there has been a faulty position of the limb for any length of time, particularly in typhoid, acute articular rheumatism and scarlet fever, one should always bear in mind the possibility of the occurrence of this complication, and, therefore, at the time the patient is about to leave his bed it should be searched for. If during the course or convalescence from a case of typhoid or scarlet fever a permanent flexion or adduction occurs, one should certainly ascertain if this complication has arisen, and if it has not, by placing the limb in a correct position a dislocation will undoubtedly be avoided. Extension, with slight abduction, will prove of value.

Regarding the treatment of the dislocation, the principal aims to be obtained are, first, to reduce the dislocation if possible, and, secondly, if this is an impossibility, to transform the bad position of the limb into a functionally useful one. Two methods are at our disposal, namely, the bloodless and the operative. As has already been pointed out, the pathologic changes which prevent reduction occur relatively late in spontaneous dislocation and, for this reason, the femur may be reduced in many cases quite a long time after the dislocation has taken place. The attempt at reduction should be preceded by first mobilizing the femoral head by movements of rotation and putting the soft structures on a stretch. Reduction must be done slowly and without too much force because otherwise extravasation of blood may result. The various methods for bloodless reduction are so numerous that it is quite impossible to discuss them here, but, in a general way, they are the same as those employed in the traumatic type. It has been generally found that the sudden, snapping sound which is heard when the head enters the glenoid cavity in reducing a traumatic dislocation does not occur in the spontaneous type. In the latter, it is a soft sound as if the head had sunk into soft wax or butter.

If the reduction has been successful, it is of the greatest importance to prevent a recurrence, because in fourteen of the recorded cases this has taken place, and in four of them it could not be reduced the second time. The best measure to be employed for avoiding a recurrence is a plaster cast with the limb in abduction and extension, and it is very important that the plaster be not removed too soon. If the bloodless reduction is not successful, or if it is impossible to hold the head in the acetabulum, one may then resort to extension, which in some cases has brought about a marked functional improvement. Nevertheless, the extension should not be continued too long because it might result in a lax nearthrosis. By extension the shortening will be temporarily diminished, but when the patient starts to walk again it may be greater than before treatment. It should also be mentioned that the so-called forward transposition was recommended by Ollier, and more recently by Goldmann. This consists in changing a posterior dislocation into an anterior one in order to obtain a nearthrosis on the anterior border of the ilium. This procedure has as yet not been resorted to in spontaneous dislocation, so far as I know, but in the traumatic type good functional results have been reported.

If the bloodless treatment remains unsuccessful, operative treatment must be resorted to. It is of highest importance never to undertake operative treatment immediately after attempts at bloodless reduction have been tried. From the crushing of the soft structures as the result of attempts at forcible reduction, the prognosis of operative interference is rendered rather bad and, therefore, it is better to postpone the operation for about a month.

We have three operative interferences at our disposal for the reduction of spontaneous dislocation of the hip, namely, (1) operative reduction; (2) resection; and (3) subtrochanteric osteotomy.

Theoretically the operative reduction is certainly to be looked upon as the most logical procedure of the three methods, for the simple reason that it restores the parts to a normal condition. However, there are some points to be considered in this operation which places a somewhat limited value on it. In the first place, operative reduction is, without any doubt, a difficult operation and should only be resorted to in strong and healthy subjects. Then again, the ultimate functional results are by no means brilliant and a more or less marked ankylosis has resulted. This is not surprising when it is recalled that the pathologic changes in the cavity of the acetabulum necessitate attention, and molding of the femoral head may also be required. Lesions of the cartilage easily result which later on will cause ankylosis, and in order to avoid this it is better to clean out the joint cavity with the knife rather than with the curette, for in this way the cartilaginous covering can be better protected. Attention has also been called to the fact that after operative reduction the shortening of the limb still remains to a certain extent which may probably be attributed to some disturbance in the development of the bone.

If operative reduction is not considered proper, or if it is found impossible, resection of the femoral head may be considered. As far as I am aware, this has been done five times, and it would appear that the functional results were fairly satisfactory. It goes without saying that more or less shortening was still present after this interference and, furthermore, the shortening will increase after the patient walks. The mobility of the joint is, however, only slightly involved.

If the limb has become fixed in a functionally useless position, and particularly when it is a case of long standing, I believe that subtrochanteric osteotomy is to be strongly recommended. In cases of long standing, and in weak subjects, this operation is to be decidedly preferred to operative reduction because it is more effective than the latter and, at the same time, it is far less serious.

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I am of the opinion that osteotomy is preferable to resection because it corrects the position of the limb without causing operative shortening of the femur, and it would seem particularly indicated in those cases which are seen early but where there is still an inflammatory process going on in the joint; also in all instances where the x-ray shows fixation of the femoral head resulting from exuberant overgrowth of bone; and, lastly, in elderly and weak subjects. It may also be resorted to in those unfortunate cases where, during attempts at reduction, the femur is accidently fractured, and several such instances have occurred. The few cases in which this operation has been done all show a considerable functional improvement. A slight limitation of motion and a little shortening are the only symptoms which remain.

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## THE TECHNIC OF ARTHROTOMY. A REPORT UPON AND DISCUSSION OF ONE HUNDRED AND NINETY-EIGHT CASES.

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(From the Orthopedic Clinic of the Carney Hospital.)

[Continued from No. 17, p. 650.]

EXCISION.

(Female Cases.)

CASE 70. M. M., female, twenty-five. Operation, Dec. 13, 1901.

Operation not performed with tourniquet; considerable amount of blood lost during and after operation.

Cast removed on second day and large blood clot found. Stimulating measures resorted to during these two days. New cast applied. Stitches removed on sixth day. New cast applied on twelfth day. Discharged on the fifteenth day.

Aug. 22, 1902. Result perfect. No motion in joint. General condition much improved.

CASE 71. D. F., female, twenty-seven, single. Operation, Nov. 13, 1902.

Capsule found to be thoroughly infiltrated with tubercular granulations. Surfaces of both tibia and femur practically denuded. Pus evacuated from pocket in capsule above patella and a large quantity of bile-colored fluid expressed from abscess in calf of leg. Crucial ligament almost entirely destroyed. Small focus in shaft of tibia curetted out, and of necessity a thicker slice than usual removed from the apposing ends of both bones. Posterior wire and side splint used to hold leg in position.

Aug. 29, 1903. Result of excision perfect as to fixation and position. Discharge from ulcer on posterior surface of calf.

CASE 72. J. P., female, seventeen, single. Partial excision. Operation, December, 1901.

When joint was opened, capsule was found very much thickened and covered with tubercular granulations. Under surface of patella eroded. External condyle of femur except for two small bony prominences practically destroyed. Latter represented sequestra and were not the seat of active disease. Both exostoses were removed with all the surrounding synovial membrane possible. Tubercular focus curetted out of external condylar head of tibia. An abscess was opened over anterior aspect of thigh and considerable tubercular pus evacuated.

Discharged Dec. 11, 1901.

Oct. 24, 1902. Since operation, genu valgum deformity has developed. Patella is freely movable. No permanent flexion and 20° active motion present. Wearing leather leg splint.

Dec. 2, 1903. Splint worn continuously and same physical conditions present as at last visit. Instructed to omit splint one hour daily and gradually increase this period.

Oct. 22, 1906. Patient has been a nurse girl three years. No joint symptoms until recent slight injury. Condition at present does not represent an exacerbation of former condition, but a simple joint strain due to genu valgum deformity. Osteotomy advised.

Jan. 31, 1907. Deformity corrected by osteotomy eleven weeks ago. Union firm. Less motion in knee-joint. To omit plaster cast and wear flannel bandage.

CASE 73. B. M., female. Operation, Jan. 22, 1902.

Mass of broken-down caseous material found in the condyle of the femur, and capsule infiltrated throughout with tubercular granulations. Excision performed. Convalescence uneventful.

Discharged March 9, 1902, wearing plaster cast.

CASE 74. M. M., female, twenty six, single. Operation, April 14, 1902.

No evidence of active disease found. Small cavity in internal condyle of femur containing 1 oz. of fluid (cyst), probably the result of osteoporosis. About two inches of tibia and femur removed and silver wire used to approximate bony surfaces.

April 23, 1902. Cast and suture removed; under anesthetic, cast reapplied. Convalescence uneventful.

Discharged June 2, 1902. Excellent operative result.

CASE 75. E. H., female, single. Operation, July 20, 1903.

Adipose tissue found infiltrated with fibrous tissue and joint capsule much thickened. On the condylar surface of the femur the articular area was almost completely covered by a pannus. This same condition only less developed was found scattered about over all the articulating surfaces of the joint. A small cavity found near inner border of internal condyle. Ends of bones excised and patella removed.

Aug. 10. Plaster cast applied.

Sept. 1. Discharged.

CASE 76. F. P., female, twenty-three, single. Operation, Oct. 28, 1903.

Patient operated upon in Providence, R. I., six months ago and diseased bone removed from head of tibia. Incision along old scar, right knee. Bone found soft and necrotic. A large piece was lifted off with chisel and cavity beneath containing sequestrum and flocculent material. Sequestrum removed. Cavity curetted and wiped out with tincture of iodine. Connection with joint was not found. Plaster cast.

Nov. 30. Condition similar to last note. Right knee-joint opened as for excision. Synovial membrane disintegrated. Moderate excess of turbid fluid. Cartilage over condyles intact, but showed loss of luster. Cartilage over tibia presented same appearance. As a result of disease and the previous operation the internal articular cartilage was lacking, except for a narrow rim, entirely absent behind, while the internal tuberosity was the site of a large cavity nearly filled with a sub-

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stance resembling large and small sago granules of glassy white luster in a scant matrix of delicate cancellated bone. This was evacuated to a depth of two inches, and head of external tuberosity being found undermined by the process, attempt to save the joint was abandoned. Articular end of femur, 2 cm., was removed, not including upper end of condyles in front or behind. Entire synovial sac removed. The patella with 0.5 cm. of extensor attached was dissected out from flap, and 1 cm. removed from head of tibia. No attempt made to remove all the new-formed substance underneath, but cavity curetted as thoroughly as possible. No hard bleeding bone was reached. Tincture iodine applied. Two wicks inserted. Posterior wire splint.

Dec. 8. Patient complained of pain in knee, and four stitches removed owing to purulent discharge.

Dec. 11. Old sinus closed with granulations.

Dec. 21. Considerable necrotic discharge. Skin not united in several places and granulations present. $AgNO_3$.

Dec. 28. Wound nearly healed. Plaster cast to leg and window cut over wound.

Jan. 10, 1904. Discharged wearing cast. Union took place between the bones, but the tumor, which proved to be a chondroma, extended further and she had a thigh amputation later on.

Case 77. G. L., female, twenty-eight, single. Operation, Sept. 15, 1905.

When joint was opened considerable tuberculous pus evacuated. A fibrous pannus was found attached to lower border of patella completely closing off lower border of patella, completely closing off lower part of joint cavity from the upper. Femoral cartilage eroded and shredded off to where infiltration of soft parts began. Cartilage over surface of tibia eroded and completely lifted off the surface of the bone. Flocculent pus found underneath and two foci in external head of tibia. Under surface of patella denuded. Excision performed.

Oct. 12, 1905. Wound completely healed. Discharged home.

Feb. 4, 1907. Some pain and swelling over outer aspect of knee ever since operation. Small discharging sinus surrounded by area of redness. Under ether a few degrees of motion are possible. Linear incision made and all possible diseased tissue removed. Tincture of iodine then applied.

Discharged two weeks later improved. No further history obtainable.

Case 78. M. E. B., female, twenty-two, single. Operation, Oct. 5, 1905.

Patient had an excision at the Massachusetts General Hospital about two years ago which has failed to unite properly. Motion in all directions can be obtained. Incision made in line of old scar. A dense fibrous pannus firmly adherent and interposed between both bony surfaces. No evidence of active disease found. Pannus removed and upper surface of tibia concaved to more advantageously hold lower end of femur when dovetailed into it. One silver wire suture used to hold external bony surfaces in apposition. Several silk sutures used on inside for same purpose.

Oct. 31. Discharged wearing plaster.

Dec. 27, 1905. Less mobility of joint than before operation.

Feb. 5, 1906. Pathological report from tissue removed — active tuberculosis. Joint fairly rigid. Continue plaster.

April 28. No lateral mobility. Slight flexion. Five centimeters shortening.

Sept. 6. Plaster removed. Flannel bandage with felt reinforcements.

Sept. 18, 1907. Able to walk any distance without pain. Bones solidly united. In good position. Requires no apparatus.

Case 79. A. B., female, twenty-eight. Operation, Feb. 23, 1906.

When joint was opened, patella was found bound down with adhesions. Many erosions and fibrous adhesions were found throughout entire joint. As the condition represents an old infectious arthritis, less of the trochlear surfaces were removed than in the excision of tubercular joint disease.

Convalescence uneventful as to knee. Transferred to Surgical Service for appendectomy in April, and finally discharged June 15, 1908.

No further history obtainable.

Case 80. L. T., female, twenty, single. Operation, Jan. 30, 1907. This was a case of infectious polyarthritis. Sepsis came from within, the operation having fanned an old infectious process into existence.

Patella adherent, cartilage everywhere eroded. Bone very soft and friable. Small wedge-shaped piece removed from mid-anterior lower end of femur to allow cavity for patella. Excision otherwise not of special interest.

Two days later wound found septic. This intervention terminated fatally March 16, 1907.

Autopsy: Knee-joint found bathed with semifluid, brown, purulent exudate. Section of soft tissues closely adjacent show several small foci (abscess) containing creamy-yellow pus. Both femoral artery and vein normal.

Anatomical diagnosis: Operative wound with extensive localized suppuration. Decubitus over base of sacrum and heels. Pressure ulcer on right leg, and question of toxemia. Blood culture negative. Culture from knee-joint, streptococcus pyogenes and bacillus coli communis.

Case 81. C. B., female, sixteen, single. Operation, March 29, 1907.

Operation performed and ½ inch of tibia and femur removed to correct or improve old infantile knee. Arthrodesis of ankle.

Discharged April 25, wearing plaster cast to groin.

Aug. 16, 1907. New plaster cast applied. Position good.

Sept. 16, 1907. Cast removed at home without instructions. Motion in all directions at knee. Flexion and extension at ankle-joint. Operation was refused and patient continued wearing plaster cast to Sept. 28, 1909, when she re-entered the hospital and an excision of the knee was performed on the following day.

Bone typical of infantile paralytic disease. Fibrous pannus over both bony surfaces, which was removed, together with thin slice of bone.

Convalescence uneventful.

Dec. 18, 1909. Excellent result. Firm bony union at knee-joint. Plaster cast removed and reapplied.

Case 82. E. R. D., female, fifty-four, married. Operation, May 3, 1907.

Linear incision over outer side of right knee, but joint not opened. Tissue, infiltrated with and containing area of cheesy, degenerated material, size of pigeon's egg, removed. Joint opened on inner side and large part of articular cartilage found destroyed. Small portion of semilunar cartilage which was free in the joint cavity and portion of the articular cartilage removed for pathological examination. Patient discharged. May 16, 1907, wearing plaster cast.

Re-entered hospital Jan. 23, 1909. Several discharging sinuses have developed during interim. Knee is held in 15° flexion. Complains of pain, swelling and limitation of motion.

Excision performed. Throughout knee-joint destruction had taken place. Few remaining portions of

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cartilage were found and much eroded bone containing small foci representing an active process. Some areas of healed tubercular granulation tissue found. Considerable blood lost during the operation. Leg put up on posterior wire splint and plaster cast was applied three days later with windows over both lateral aspects of knee-joint.

Discharged March 11, 1909. Wound healed except for two discharging sinuses.

Jan. 1, 1910. Patient has a fair functional result and is able to get about the house. No pain or tenderness for past few months. Sinuses still discharge. Should have had an amputation, but refuses it now.

CASE 83. N. B., female, twenty, single. Operation, Oct. 13, 1909.

Patient has had several discharging sinuses about right knee for a long period of time. When joint was opened some free tuberculous pus and marked destruction of the joint was found. Many small foci (bone) were present, necessitating the removal of a thick slice of bone from both tibia and femur. Patella and entire quadriceps pouch removed.

Convalescence uneventful.

Plaster changed Oct. 27, 1909, and patient was discharged to Out-Patient Department.

Dec. 13, 1909. No symptoms. Plaster removed and new one applied.

Among the series of 30 excisions was one case of chondroma; three of infantile paralysis and two of infectious arthritis; one of these was a polyarthritis.

There was one death attributable directly to the operation, that being in the case of infectious polyarthritis.

There were three infected joints, but no serious consequences resulted. Convalescence was not even retarded by it in any case. There was one other case that had a stitch abscess. Twenty-four of the excisions were for tuberculosis. Two of these died some months after the operation, one from miliary tuberculosis and one from phthisis. One of the cases had a partial excision, one femoral and the corresponding tibial condyle. She secured a good degree of motion in the joint, and after having an osteotomy to correct her knock-knee, she had a very serviceable articulation. Two cases already referred to had secondary excisions. Only one was lost sight of before union was complete. Only one did not have satisfactory position. Three only of these cases had metal sutures used. Two of these had them removed, and in one there was slight necrosis about the stitch. One still has the wire in place. Twelve were females and 18 were males.

The important technical matters to observe in performing excisions of the knee are to remove the osseous disease wholly along the cut surfaces and to be sure of an accurate approximation of the cut surfaces. If these two rules are observed the necessity for metal sutures or plates of any kind will rarely if ever occur.

A small series of erasions follow. Most of these were performed for tuberculous disease. The technic of getting at the interior of the joint is not in any way dissimilar from the technic used in the excision operations. The operation is not, in our opinion, to be compared in its beneficial effects with the operation of excision. Whether it be accomplished by sawing through the patella and flexing the knee, or by dividing the patellar tendon and reflecting back the patella, thus exposing the quadriceps pouch, the convalescence is protracted to such an extent by the union of the bone or the tendon (whichever method is employed) that there is very little likelihood of obtaining enough motion to justify the operation in such an articulation as the knee. In other joints it might be used in selected cases, but seldom in the knee. The difficulty is not in securing a pathological cure, but in procuring enough function to justify the operation. One of the things that has been brought out from a study of these cases and the excisions is that tuberculosis in the knee at any rate starts very much more frequently than has generally been supposed from the synovial membrane, and is likely to invade the cartilage and bones if a tuberculous synovial pannus be allowed to lie too long in contact with such structures. In certain selected cases an erasion and the procurement of a pathological cure, even though very little motion should be secured, might be subjected later to an arthroplasty to secure motion. Several of these cases have had 20° of motion for a year or so after the operation, but have gradually lost it and have been a great deal better off when ankylosis had taken place. The recent observations of Ely upon the pathology of tuberculous joints are interesting and offer further support to the contention here made that erasion is not as good an operation as excision in a majority of tuberculous involvements of the knee-joint. Some surgeons are employing arthroplasty after the method of Murphy in these tuberculous cases, but the results are, in our opinion, not sufficiently satisfactory to justify its employment. The transplantation of an entire joint may in the future yield better results.

ERASION.

CASE 84. J. J., male, seventeen, single. Operation, Aug. 23, 1901.

Right knee opened as for excision of the joint. After the thickened synovial membrane was throughly dissected away, a necrotic area, apparently the original focus of disease, was found in the external condyle of the femur. This was thoroughly curetted; also a few eroded areas of cartilage found over articular surfaces of both bones, and the joint was irrigated with sterile water. Patellar tendon restored with silk sutures and wound closed. Plaster cast applied.

Sept. 19. Discharged. No symptoms to note.

Jan. 15, 1902. Few degrees of motion in joint. No symptoms.

March 31. Few degrees of motion persist. Patient wearing leather cast. Patient moved to Canada and he reports by letter that he has a useful limb but no motion.

CASE 85. P. L., male. Operation, Aug. 4, 1902.

Right knee opened on inner side. Capsule thick and hypervascular. Incision continued as for excision of the joint. Synovial membrane .5 to .8 cm. in thickness, and glossy, resembling a tubercular condition. Both condyles of femur covered over outer side by a pannus closely adherent to cartilage which rendered it striated and almost eroded. A communicating bursa in the popliteal space contained tubercular pus, fibrin flakes

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and caseous fragments. The synovial membrane was completely removed and no bony invasion could be found. A counter-opening made to drain popliteal space. Tincture of iodine applied and joint irrigated with corrosive solution. Wound closed leaving wick. Posterior wire splint.

Aug. 18. Plaster cast applied. Slight discharge from posterior drain.

Aug. 25. Wound dressed through window in cast. Slight discharge persists. General condition improved. Discharged.

Sept. 30, 1902. Sinus has nearly healed. Patient to continue use of cast. No further history can be obtained.

Case 86. B. McQ., male, twenty, single. Operation, Aug. 18, 1905.

Right knee-joint opened as if excision were to be performed. Considerable tubercular granulation tissue about internal condyle and a fibrous pannus covered most of the external condyle. Cartilage over internal condyle was elevated from the surface of the bone, but disease underneath was very superficial and apparently represented the ingrowth of granulation tissue rather than any active disease. The whole general appearance of the upper surface of the joint indicated that the disease was well spent. Synovial membrane where it showed disease was removed. Pannus and eroded cartilage also excised. Tincture of iodine applied and joint irrigated with sterile water. Deformity left undisturbed, preferring to do a Macewen osteotomy later if disease is entirely extirpated, as an excision would have shortened the leg too much and there seemed a fair chance that the active process could be completely removed. Wound closed and cast applied.

Sept. 5, 1905. Discharged wearing new cast.

Case 87. J. F. M., male, twenty-six, married. Operation, Oct. 24 (?), 1905.

Right knee-joint opened as for excision. The small amount of the synovial membrane found diseased was removed. Necrotic bone was found over the surface of the tibia and femur and was removed with curette as far as possible. Joint capsule united and plaster cast applied.

Nov. 2. New cast applied.

Nov. 7. Discharged. No pain or tenderness.

February, 1906. X-ray shows process extending downward from tibial head. An excision was attempted, but both bones were found badly diseased and an amputation seemed advisable. This was accordingly done, the patient having been previously prepared for this outcome.

March 25, 1906. Wound entirely healed. No symptoms.

Case 88. C. L. R., male, forty-three. Operation, Aug. 10, 1906.

Incision as for excision of left knee. A pannus of dark fibrous tissue removed from internal condyle. Synovia throughout joint thickened. X-ray showed focus in internal condyle, but trephining did not verify this interpretation. A small focus of diseased bone found over external condyle removed. Ninety-five per cent carbolic applied and immediately followed by alcohol. All diseased tissue removed and tincture of iodine applied. Wound closed and leg put up in posterior wire splint.

Convalescence was delayed owing to collection of serum and ooze from wound.

Aug. 24. Plaster cast applied.

Sept. 11. Discharged home.

Case 89. W. R. M., male. Operation, March 14, 1908.

When left knee was opened a large fibrinous clot was removed. Cartilage was thick and eroded under pannus, which covered both femoral condyles and dipped down between to some extent. Pannus and diseased capsule removed as far as possible. Patella normal. A portion of one semilunar cartilage was found partially detached and was removed. Adhesions in the quadriceps pouch broken up and considerable fibrinous material removed. Tincture of iodine applied and joint closed, leaving drain in either inferior angle of wound. Long posterior wire splint applied.

March 29. Plaster cast including foot.

April 2. Patient has apparently an incipient tubercular meningitis.

April 4. Discharged against advice. Died four days later.

Case 90. L. N., male, nineteen, single. Erasion of left knee. Operation, Dec. 29, 1908.

Left knee opened as for excision. Leg flexed after joint was opened. No erosion of joint surface, but large pannus, purple in color, over trochlear surface of femoral condyle, covering outer ¼ inch of cartilaginous margin. No adhesions present in quadriceps, but entire surface covered with pannus of same nature as that found over condyle, somewhat thicker, however. Over outer border and attached at margin of external condyle was a fungus-like mass, size of English walnut, connected to bone by a fibrous pedicle below border of cartilage, which, however, did not seem to lead down to any osseous focus. Capsule not thickened below quadratus bursa. Patella normal. Pannus removed as far as possible and fungus mass excised. Tincture of iodine applied. Joint surface restored. Two iodized wicks left in infra-patellar space. Plaster cast applied.

Jan. 11. New cast applied.

Jan. 19. Discharged home.

Case 91. D. L., male, thirty-three, single. Operation, March 21, 1909.

Left knee-joint opened over inner side. Many floccular masses found in the joint. Few fringes of a similar nature found, especially over inner condyle of femur, and removed. Tincture of iodine applied. Wound closed and light plaster cast applied.

May 28. About 10° motion in knee.

July 16. Patient's knee in good condition. Has no pain or discomfort. Apparently progressing favorably. To be allowed more motion. To wear split cast a half day only.

July 23. To leave off cast entirely.

Aug. 6. No surface heat. Patella movable. Some thickening in quadriceps pouch. Knee brace allowing only 10° motion.

Case 92. J. G. D., male, twenty-three, single. Operation May 5, 1909.

Left knee-joint opened through linear incision over inner aspect. Numerous soft brown villi, in size and appearance like earth-worm, and a small quantity of brownish fluid, found and removed. Small fatty mass excised from under surface of patella. A hard, smooth body attached by pedicle was found in the quadriceps pouch and removed with some difficulty. Joint irrigated with salt solution and wound closed.

May 26. Motion to a right angle. Pathological report: Tuberculosis of soft parts. Knee swollen. Plaster cast applied.

June 15. Discharged, wearing split cast.

Case 93. M. D., female, twenty-eight, single. Operation, Nov. 11, 1904.

Incision 4 cm. long made over and parallel with the middle metacarpophalangeal joint of the right hand. Blunt dissection and retraction of the tendons exposed the joint. Capsule not well-defined, but was thickened by granulation tissue adherent to the bone.

In the joint was found necrotic granulation tissue. Base of phalanx removed owing to its necrotic condition.

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A small specimen of bone was removed from the metacarpal bone for pathological purposes. Tincture of iodine applied and wound closed.

Nov. 16, 1904. Discharged. Small granulating area at center of wound.

*(To be continued.)*

## Clinical Department.

### STOMACH DISEASES FROM A MEDICAL STANDPOINT.

BY GEORGE ALBERT MCEVOY, M.D., BOSTON.

MEDICALLY these diseases cover too large a field to be lightly passed over, and in conversation with recent graduates I have learned that sufficient attention has not been paid to this subject, and because of this it is quite easy to understand why the surgeons are claiming, and rightfully, the cure of digestive disturbances by surgical procedure.

After some experience in the treatment of these diseases, and with all fairness to the profession, many things have been impressed upon me, the most noticeable being the apparent lack of knowledge or total disregard of the use of the stomach tube, which, when used, is mostly for the purpose of lavage instead of for its real value, i. e., as a means of diagnosis.

The following cases stated briefly will demonstrate quite conclusively the absolute need of the tube.

No. 1. Thomas S., forty-six, mill-man, pain over epigastrium for one year, considerable gas, loss in weight 25 lb. Test by tube showed normal secretions and the physical examination was negative. Diagnosis: Nervous dyspepsia, and under treatment complete recovery. A previous diagnosis of cancer had been made.

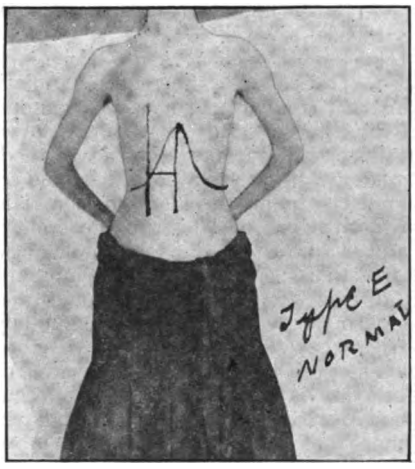
No. 2. Ellen M., twenty-six, single, maid, sudden pain over whole of abdomen with considerable vomiting. Test by tube showed an excessive free HCl acid and the physical examination showed tenderness over abdomen, most marked over epigastrium. Hyperchlorhydria the diagnosis. Under treatment rapid recovery. A previous diagnosis of appendicitis had been made and operation advised.

No. 3. M. F., thirty-three, student, pain in epigastrium for fourteen months, increasing in severity until it caused vomiting; consulted many physicians, some of whom advised operation for gallstones. Test by tube showed an excessive free HCl, and under treatment made a rapid recovery. Diagnosis, ulcer.

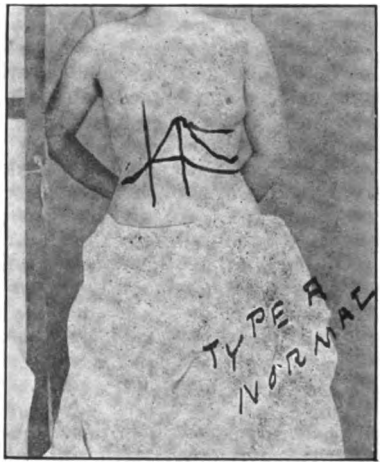
It is quite evident that these few cases demonstrate the real value of the tube, and it has seemed strange to me that physicians should cast aside this means of obtaining proofs which are just as positive and easily obtained as are those in lung, kidney and throat cases. Is it that the methods for obtaining such proofs are considered by the profession too difficult and disagreeable, or is it because the necessity for such proofs is inadequately taught?

Having shown the value of the tube in determining the first proof in the treatment, the next step of importance to consider is the position of the stomach with reference to its size and motility. The simplest and probably the most convenient method for general use is the $CO_2$ for demonstrating the position and size, and a test dinner or supper to determine its motility.

In reference to the position, size and motility, we can learn a great deal that will help us in our treatment by considering the construction of the body with reference to the stomach. In relation to this consideration we have two different types of body; i. e., habitus enteropticus, and habitus




Type E, normal.




Type A, normal.

apoplecticus. The habitus enteropticus type is represented by a line drawn from the end of the xiphoid to the umbilicus, one half of which is much greater than that of a line drawn from the center of this line to meet one drawn vertically from the middle of the clavicle. The habitus apoplecticus type is represented by a line drawn from the end of the xiphoid to the umbilicus, one half of which is equal to or shorter than that of a line drawn from the center of this line to one drawn vertically from the middle of the clavicle.

We are taught in physics that the gravity of a

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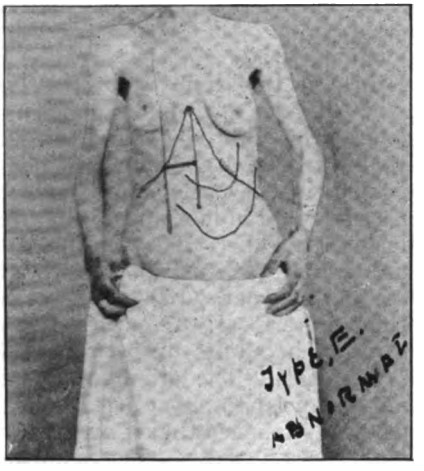
body moves in the plane of least resistance, and, applying this fact in our demonstration, it is easy to understand why in habitus enteropticus type the course of the stomach is downward, while in habitus apoplecticus it is toward the right.

The importance of considering these types as an aid in our treatment is shown by considering the results which are produced pathologically. In habitus enteropticus invariably the end result




Type E, abnormal.

is a gastroptosis with dilatation due to the prolapse and motor insufficiency, while in habitus apoplecticus the result is quite different, because

Type A, abnormal.

any change in position and size is usually at the expense of the lower border, which is generally forced downward and to the right, while invariably the upper border remains normal.

A brief explanation of how the changes are produced will further simplify our understanding in the treatment of these types of body. We know that in the habitus enteropticus type the tendency of the stomach is downward, and, because of its attachment to the duodenum, which is never more than slightly movable, we shall sooner or later, if the prolapse continues, have a kinking or constriction at or about the pylorus which shall, if too much work is thrown upon the stomach, cause a motor insufficiency producing a dilatation, while in the habitus apoplecticus type most all of the conditions begin with an increase of the acid secretions and, as a result of this increase, we can have dilatation produced in different ways, as by spasm of the pylorus or by a narrowing of the pyloric orifice by healing of an ulcer.

It can be seen from these few facts that the end result in both types, if the cause is continued long enough, is a dilatation, and as its production is different, so also must be the treatment, and as the subject of treatment is too important and extensive to be discussed in this paper, I shall only mention the principle of the treatment in relation to the conditions found. For instance: In a case of gastroptosis with motor insufficiency producing a dilatation, the principle of the treatment is to consider how much the stomach has prolapsed and how extensive is the dilatation because of the motor insufficiency, and then arises the question as to quality, quantity and the intervals of administering the treatment, and from this instance, as in many others, the problem of treatment is to treat the cause. But if the cause has left its results, we must treat the results, for in many cases, while we cannot remove the cause, we are able to correct the results.

Conclusion: It is quite evident after what I have shown that if we pay special attention to the proper use of the tube as a diagnostic measure, and treat the diseases according to the mechanical changes produced pathologically, better results will be obtained medically and fewer cases be referred to the surgeons.

## Medical Progress.

### REPORT ON NEUROLOGY.

BY PHILIP COOMBS KNAPP, A.M., M.D.

#### POLIOMYELITIS.

Wickman[1] has recently reported the results of a pathological study of seven cases of poliomyelitis occurring in the great Swedish epidemic of 1905 of over one thousand cases, described in his well-known work. These cases all died in the acute stage of the disease, in from two and a half to eight days after the onset, and most of them showed an ascending paralysis, as in Landry's disease. In all cases there was infiltration of the spinal pia, especially in the lumbar region, with occasional patches of infiltration in the cerebral pia. One of the most striking changes was the accumulation of round cells about the blood vessels and elsewhere, especially in the anterior horns, but also in the posterior horns. There were occasional small hemorrhages in the gray matter of the cord, and sometimes in the white matter. Edema in portions of the cord was very common. In no case was there any indication of thrombosis or embolism. The accumulation of round cells in

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the neighborhood of the ganglion cells is the cause of the rapid destruction and disappearance of the ganglion cells by neuronophagy. Vascular and interstitial changes are also constant in the medulla and brain stem, most pronounced in the reticular substance, but occurring elsewhere without showing a special predilection for the motor nuclei. Similar changes were found in various parts of the brain, the cortex, the basal ganglia and the cerebellum. He regards poliomyelitis as an acute, infiltrative, non-purulent inflammation of the lymphocytic type. In the very earliest period there is a migration of the polynuclear leucocytes. Polyblasts also develop and play the chief part in the process of infiltration. The greater extent of the process in the anterior horns is due to the fact that they are more vascular than any other part of the cord.

Hoffmann [2] has reported the case of a young man of twenty, who had previously been deaf and partly blind, and who developed pain in the wrist and a heavy feeling in the back. A few days later he had a sudden tremor in the arms, and during the night the right arm became completely paralyzed (upper arm type), and the left leg partly paralyzed. The paralysis was flaccid and atrophic with reaction of degeneration. He had Hutchinson's triad of signs of hereditary syphilis, and the cerebrospinal fluid showed increased lymphocytosis, albumen, inhibition of hemolysis and agglutination of erythrocytes. The clinical picture, except for the examination of the cerebrospinal fluid, was typical of acute poliomyelitis. Under syphilitic treatment the leg recovered and the arm improved. Preobraschenski [3] has reported a somewhat similar case in a man of forty-six, who had had syphilis fifteen years before. For two days the limb had felt weak, the weakness increasing rapidly until both arms and one leg were paralyzed. On the fourth day there was complete paralysis of all four limbs. In about two months he died, with signs of respiratory paralysis. There was an extensive poliomyelitis of both anterior horns from the mid-cervical region down, the blood vessels were increased, their walls thickened, the membranes were thickened and adherent, and there was a pronounced cellular infiltration — a true syphilitic poliomyelitis. These syphilitic cases are extremely rare, but it is most important to recognize that they do occur, and to investigate the possibility of a syphilitic origin in dealing with any case of poliomyelitis.

Batten [4] reports two cases which raise an interesting question. A child of two years had had weakness of the left arm from birth, but weakness of the legs was not noticed until between the age of one and two years. The left upper arm was much wasted, the legs were also wasted, the right more than the left, and they were blue and cold. The legs were very weak, but the child could bear his weight on the left. There were diminished reflexes and reaction of degeneration. The legs improved so that he could walk, but the arm was helpless. Six years later he died of diphtheria. There was a marked diminution of cells in the left anterior horn in the fifth cervical segment, and in both anterior horns in the lowest dorsal, third lumbar and second sacral segments (which were selected for microscopical examination), with diminution in the size of the cord and areas where medullated fibers were absent, the changes being similar to those found in late cases of poliomyelitis. A second case, said to be congenital, showed a typical atrophic paralysis of the right leg, and poliomyelitic changes in the cord. After a careful consideration of various theories, Batten believes that the first case was very probably, and the second possibly, intrauterine poliomyelitis.

Experience in this country in the last three years has been such as to make previous records of epidemics, even in Sweden, almost insignificant, yet there have been a good many epidemics reported which, in the past, would have been regarded as severe. Lindner and Mally [5] report an epidemic in September, 1908, in the vicinity of Grossraming, in upper Austria. Between September, 1908, and February, 1909, 94 cases occurred, 16 of which were fatal; 37 occurred in children under three, 4 in adults over twenty; 37 were females, 57 males. The origin of the epidemic could not be traced to any other epidemics, and the theory was advanced that it might have arisen from some sporadic case. The clinical picture showed many variations from the classical type, and abortive cases occurred. The disease affected persons dwelling in the same house, and there was proof of direct contact or indirect contact through a third person. Children living far apart, but attending the same school or having others in the family attending the school, were affected. There was no evidence of transmission by water or food. All the ascertainable facts favored the transmission from one person to another. Hoffmann [6] reports 36 cases occurring near Heidelberg from June to October, 1908, 20 below the age of two, and 2 adults. There was no increase in acute encephalitis with spastic hemiplegia or in polyneuritis in that time. Zappert [7] reports 266 cases occurring in lower Austria in the summer and autumn of 1908. Krause [8] studied over 100 cases in an epidemic at Hagen in the summer of 1909. Ninety per cent of these began with gastro-intestinal symptoms. Many of them were nurslings. In one region there was also great mortality among young chickens. Recksch [9] reports 93 cases in the neighborhood of Bochum from the middle of July to the middle of October, 1909, of whom 17 died. Neurath,[10] in Vienna, saw 3 cases in 1902, 45 in 1908 and 28 in the first half of 1909. Other data not yet fully formulated indicate that the epidemic in 1908 and 1909 has been pretty extensive throughout Germany and Austria. The French and Italian journals, however, do not show any special epidemics in those countries. Treves [11] has collected the record of thirty-two epidemics, thirteen of which occurred in Sweden, and only two small ones, seven cases in all, in England, although many cases which were never collected occurred in London within the last few years. He reports an epidemic of eight cases in the village of Upminster, with a population of 1,477, between

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July and September, 1908. The origin could not be traced. Stephens [12] reports 135 cases occurring in Victoria, Australia, in the first half of 1908, chiefly in the autumn months, April to June, with a death-rate of 4.5%. Most of the cases occurred in Melbourne and seemed mildly contagious. There was a considerable epidemic in Queensland in 1905. Although the occasional epidemic occurrence of poliomyelitis has been recognized since 1881, the remarkable increase in the last five years is as yet unexplained. The disease has been recognized for so long a time, and is ordinarily so easy of recognition, that the increase cannot be imputed to an increase in our diagnostic skill. Whether the great Swedish epidemic of 1905 and the epidemic in Queensland in the same year can be regarded as in any way the sources of the subsequent epidemics in America, Germany and Australia, is a problem.

### SYPHILIS OF THE NERVOUS SYSTEM.

Mott [13] classifies syphilitic diseases of the nervous system as follows: (1) *a*. Syphilitic diseases of the brain, comprising basilar meningitis, meningitis of the convexity, cerebrospinal meningitis, arteritis and gummatous tumors. All these conditions may be more or less combined in the severe and early forms of the disease. *b*. Syphilitic diseases of the spinal cord. (2) Parasyphilitic affections: tabes dorsalis, tabes optica, paralytic dementia. The whole cerebrospinal axis is usually, if not always, affected, although the chief symptoms may be cerebral or spinal. He contends that a slight meningitis may often be associated with the early stages of syphilis, as is shown not only by such clinical symptoms as ocular troubles and paralysis of cranial nerves, but by the frequent existence of lymphocytosis during this period. In parasyphilitic and syphilitic meningitic affections the lymphocytes in the cerebrospinal fluid are greatly increased in numbers. In syphilitic cases the lymphocytes diminish under antisyphilitic treatment, and as the symptoms diminish, but in parasyphilitic disease they do not. Lymphocytosis, however, may occur with other diseases. In general paralysis, and, to a less degree, in tabes, there is an increase in proteid in the cerebrospinal fluid. The Wassermann test of the cerebrospinal fluid proved positive in 59 out of 64 cases of paresis (92.1%), but in 63 cases not suffering from paresis it was not once found to be positive. In cases of atypical tabes and paresis where the Wassermann reaction is not obtained when the cerebrospinal fluid is examined, and the lymphocyte reaction is marked, antisyphilitic treatment should be instituted. Clinical indications of pseudo-tabes are sudden onset and rapid progress of symptoms, early appearance after primary infection, variability of the reflexes, central scotoma in one eye, and marked improvement under treatment. Why only about 3½ per cent of those infected with syphilis subsequently suffer from the parasyphilitic affections is still an unsolved problem. Parasyphilitic affections are more apt to follow mild or even unrecognized syphilis. The virus may be modified, acquiring a special neurotoxic action, as is shown by the fact that sometimes a large percentage of parasyphilitic affections follow infection from a single source, of which Mott cites many interesting examples. This speculation is somewhat contra-indicated by experiments on animals, so that it seems more probable that the variation of effects is due, not to a variation of the virus, but to the reaction of the individual. All conditions which tend to active metabolism of systems of neurones will, in conjunction with the stimulating effect of the syphilitic poison, cause the nerve cells to exercise an abnormal metabolic activity in the production of the side-chain molecules necessary for immunization, thus leading to decay.

Nonne and Holzmann [14] report investigations on 49 cases of tabes, 20 cases of paresis, 22 cases of cerebral and spinal syphilis, 12 cases of multiple sclerosis, 33 cases of epilepsy, 6 cases of neurasthenia, 3 of which had had syphilis, 10 cases of alcoholic pseudotabes, and 17 cases of cerebral tumor. In tabes and paresis, lymphocytosis and the globuline reaction (Phase I) are almost always present. Both reactions are very rarely absent in cerebrospinal syphilis. In multiple sclerosis they occur in a minority of the cases and are weak. In epilepsy, neurasthenia, pseudotabes and tumor they are absent, unless there be syphilis, when there may be a feeble lymphocytosis, but Phase I almost always is absent. The Wassermann reaction occurs in the blood serum in 60 to 70% of the cases of tabes, but is almost always negative in the cerebrospinal fluid. In paresis, on the contrary, it is almost always positive both in the serum and in the cerebrospinal fluid, and seems an important factor in the differential diagnosis. It may be negative in the cerebrospinal fluid in hereditary paresis. In epilepsy and brain tumor the Wassermann reaction is negative unless there be syphilis, when it may be positive in the blood serum. All four reactions are independent of the stage and the special variety in the course of syphilis. In a further study [15] of 93 cases of tabes they confirm the statement that the Wassermann reaction, conducted by the original method, is negative in the cerebrospinal fluid in simple tabes, which is a help in the differential diagnosis from incipient paresis with involvement of the posterior columns and from tabes with beginning paresis. In a later study Nonne [16] presents the data derived from 40 cases of paresis, 104 cases of tabes, 29 cases of cerebrospinal syphilis, 17 cases of multiple sclerosis, 14 cases of brain tumor and 37 cases of epilepsy, 394 in all. These investigations practically confirm his previous conclusions; lymphocytosis, however, is not always alike in different examinations of the same patient, and that and Phase I may exceptionally be absent in tabes, paresis and cerebrospinal syphilis. The Wassermann reaction is sometimes positive in the serum in scarlet fever. It is important to distinguish between the reaction in the serum and in the cerebrospinal fluid. In rare cases it is negative in the serum in paresis, but it may be positive on subsequent examination; if, on repeated examinations, it be negative in the serum, we must

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look with suspicion on the diagnosis of paresis. The same is true of the reaction in the cerebrospinal fluid. In paresis all four reactions (lymphocytosis, Phase I, Wassermann serum and Wassermann fluid) are positive. In tabes, lymphocytosis and Phase I positive; Wassermann serum positive in 60%; Wassermann fluid negative. In cerebrospinal syphilis, lymphocytosis and Phase I positive, Wassermann serum more often positive than in tabes, Wassermann fluid negative. In multiple sclerosis, lymphocytosis and Phase I may occur, but are weak; Wassermann serum may exceptionally be positive; Wassermann fluid negative. In tumor, lymphocytosis and Phase I may occur, but are weak; both Wassermann tests are negative. In epilepsy, all four are negative.

On the clinical side Nonne [17] cites various cases to prove what is now well recognized, that syphilis may attack the nervous system in the early period of the disease, two to four months after the initial lesion. After the tenth year cerebral syphilis is rare, but cases have been known thirty and even forty years after infection. When syphilis is acquired late in life it seems more liable to affect the nervous system and to run a more severe course. He is more disposed than Mott to explain the occurrence of parasyphilitic affections by assuming that there is a special neurotoxine in the infecting virus. Mott and Nonne both agree that syphilis is more apt to attack the nervous system if mercurial treatment has been insufficient or has been wholly omitted. Mott believes that if the spirochete has once gained access to the subarachnoid space it is very difficult to dislodge, so that, if this takes place early, the most thorough mercurial treatment may be of little avail.

A word must be added in regard to Ehrlich and Hata's new treatment of syphilis by dioxid-amido-arseno-benzol, or "606," concerning which Simonelli [18] has just published an excellent critical digest of the various articles. Ehrlich's aim has been to find some substance which would have a special chemical affinity for the spirochete, without harming the general organism. This he has used in one single dose — *therapia magna sterilisans*. After trial of many substances he has found "606" the most efficacious. The best method at present of administering the drug seems to be that endovenous injection as practised by Hoppe and Schreiber,[19] which causes less pain than the intramuscular injection, and is not followed by the local reaction. The injection is sometimes followed by a considerable rise of temperature, some cardiac irregularity and skin eruptions. In the few cases where serious consequences have followed, they have been due to some co-existing disorder. In the great majority of reported cases the new remedy seems to have given remarkably good results, both in the primary, secondary and tertiary stages of syphilis, and in a very considerable percentage of cases the Wassermann reaction has changed from positive to negative. Wechselmann,[20] Neisser,[21] Treupel [22] and Glück [23] report cures or marked amelioration in a number of cases of severe cerebral syphilis, but Glück had found no benefit in the treatment of three cases of parasyphilitic affection, two of paresis and one of optic atrophy. Up to the present time it seems doubtful whether there have been any true relapses after the treatment, but it is too early to decide whether it does actually cut short the disease.

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(*To be continued.*)

## Reports of Societies.

### THE AMERICAN CLIMATOLOGICAL ASSOCIATION.

WASHINGTON, D. C., MAY 3, 4 AND 5, 1910.

THE twenty-seventh annual meeting of the American Climatological Association was called to order by the President, DR. EDWARD R. BALDWIN, of Saranac Lake, N. Y., at the Willard Hotel, Washington, D. C., May 3, 1910, at 10 A.M. The secretary called the roll and seventy-five members were found to be present or attended the later sessions.

Dr. Baldwin then gave the President's Address on

THE ORGANIZATION OF HEALTH RESORTS.

He stated that, owing to the rapid change in the attitude of the public in reference to fear of contagion in tuberculosis, there is a new problem presented in health resorts.

Sanatoria and hospital care are increasing, but the patient's sojourn in them is temporary. Colonization of the tuberculous in the vicinity of sanatoria, as well as in western and southwestern resorts, continues, but the patients are increasingly from the chronic or arrested class who have tried home or institutional treatment.

Result: Sooner or later more dependents and representing a class who have obtained a legal residence in the community. They should be better cared for than in the average county hospital. There should be some system of co-operation with local and other charitable agencies by means of a central bureau of information, whose secretaries shall seek out the patients requiring aid, refer them to proper authorities, or secure aid from their former homes. Reception hospitals needed from which they may be sent to sanatoria or back to former homes.

DR. ALBERT C. GETCHELL read a paper on the

SUMMER CLIMATE OF MAINE,

in which he took up the following points:

Has the Maine summer climate power to restore the sick as it evidently has to refresh the tired?

Geographical considerations: Latitude, mountain, lake, forest, seacoast. Climate: Varieties of weather, temperature, sunshine, soil. Facilities of transportation. Living accommodations in hotels, boarding

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houses and camps. Personal experiences with persons who have been benefited by a summer sojourn in Maine for respiratory troubles.

Dr. Getchell said the chief charm of Maine is its water, seashore, lakes and ponds. He described Sebago Lake, the Rangeleys and Moosehead Lake, the Belgrade Ponds and the opportunities for sport of all kinds. The climate is changeable and these changes are of greater intensity in winter than in summer. The periods of heat are short, and even then the heat is tempered by the large extent of forests, lakes, rivers and ocean. The trend of the coast is such that the hot winds of summer from the south and southwest come over the ocean so that hot days are rare compared with other parts of the New England coast. Owing to the deep bays and inlets of nearly the entire length of the coast, one has an opportunity to select his ocean climate from that of the outlying islands and headlands, where one is practically out at sea and the weather is cool, even cold, to the inland and sheltered nooks, where one gets the heat of the land with the diurnal, tempered and refreshing sea breeze. Dr. Getchell referred to the fogs and the sunshine and made some comparisons between the clear, partly cloudy and cloudy days in Maine and Colorado during June, July, August and September. The comparison was quite favorable. The influx of summer visitors was referred to. Large numbers go in the autumn for deer and moose hunting. Dr. Getchell cited cases of tuberculosis which improved greatly in Maine during the summer near Belfast and Rockland. Another patient recovered health in the Aroostook country. Dr. Getchell spoke very favorably of the neighborhood of the Katahdin Iron Works, about thirty miles east of the southern end of Moosehead Lake. There are areas in Maine, near the Rangeley Lakes, in which relief has been found for hay fever in Dr. Getchell's experience. The ocean climate of Isle au Haut is suitable for the hay fever sufferer. So, also, in places on Mount Desert Island. The coast is a restorer of tired and worn-out bodies, but the summer of the Maine coast is cool and a certain type of delicate person, not to say invalid, finds it difficult to keep sufficiently warm to be comfortable. Dr. Getchell referred to the Maine Sanatorium for Tubercular Patients at Hebron, and also to the famous Poland Springs.

### DISCUSSION.

Dr. E. O. Otis, of Boston, Mass.: In this connection it may be well to mention the adjacent coast region of New Hampshire. This short coast line, thirteen miles in extent from the Piscataqua to the Merrimac, for the larger part is composed of sandy beaches, in contrast with the rocky character of the Maine shores. From personal experience of several years with the summer climate of both the Maine and the New Hampshire coasts, it has appeared to me that on the latter coast there is a little drier atmosphere. In other respects, so far as the temperature and the climate are concerned, the conditions of the southern Maine and New Hampshire coasts seem very similar.

Dr. C. L. Minor, Asheville, N. C.: I have had a personal opportunity of noting the value of the Maine summer climate in pulmonary trouble. I have not tried the up country of which Dr. Getchell speaks, but have tried the coast, and, despite the fogs, have found the latter admirable. There is not only a very cool summer, which is important, but there is a combination of the brace of mountain air with the tang of the sea air which has a wonderfully stimulating and appetizing effect, and I believe, in properly selected cases, with slight trouble and moderate symptoms, that the Maine coast in the summer is to be thoroughly recommended, and that you would have to go into Upper Canada to get as good.

Dr. Guy Hinsdale, of Hot Springs, Va.: I would like to say a word about the climate of the coast of Maine. I have had some experience with it for the last twelve or thirteen years, and I read a paper before this Association on the climate of Maine in 1901. The soil of the coast is more sandy than that of the interior, and the air of the coast is not so damp as most people think. I agree with Dr. Bowditch in his views regarding the dryness of fogs of Maine. It seems paradoxical to speak of dry fogs, and yet there is a certain amount of truth in it. We may have vapor in the atmosphere, and while that vapor is visible, still the atmosphere itself is not as damp as the fogs which we get in our cities or on the top of the mountains. A fog on the top of a mountain may seem more penetrating than the fogs of the seashore, whether it is Maine or Massachusetts. The Maine climate is a changeable one. It is true generally that on nine days out of ten there is rain in some part of New England, and that it is subject to cloudy weather, owing to the frequent passage of cyclones down the valley of the St. Lawrence. But this comparison which Dr. Getchell made shows that we are not so very far behind the state of Colorado as to the total number of cloudy and partly cloudy days.

As far as game is concerned in Maine, it is surprising to me to find out how many deer are transported by the railroads. Over three thousand deer every year have been shipped by the railroads in Maine for a number of years past. These deer are only a part of the total number that are killed, and if we add the meat that is eaten in camp, there are about four or five thousand deer killed in the state of Maine every year. About one hundred and seventy-five moose are shipped by railroads in Maine. So the game supply of Maine is on the increase rather than on the decrease. There are very stringent laws, too, regarding the shooting of deer and moose out of season, there being a $1,000 fine for shooting moose in the close season. There is a $1,000 fine for a gunner killing more than one moose in a season. The state of Maine has done a great deal to preserve its natural resources; it does a great deal more than many other states in this direction. The income to the state of Maine from the visitors is considerably upwards of fifteen million dollars every year. The state of Maine is wise enough to see the necessity of doing many things for the protection and the interest of the summer visitor. They are also improving the roads of Maine, I am glad to say, through state appropriations, and this is a very valuable point.

Dr. Charles E. Nammack, of New York City, presented a paper on

### NORWAY FOR NEURASTHENIA.

He described the Norway trip in summer and the geographic and climatic features of Norway. This country consists of one huge mountain mass cut through in all directions by valleys, gorges and passes, intersected again by lakes and rivers forming torrents and cataracts innumerable. The western coast, particularly at its northern part, enjoys a mild climate, like that of Christiania, twelve degrees of latitude to the south. In the interior, distant from the sea, the cold in winter is intense, and the heat in summer is equally oppressive. At Valle, latitude 59° N., altitude 1,000 feet, the range is from —31° F. to +107° F.

Norway enjoys the mildest climate of any region so remote from the Equator. Owing to the continuous daylight in the north, vegetable growth goes on with incredible rapidity. The annual rainfall on the western coast is heavy, but diminishes inland. At Bergen it

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exceeds 75 inches; at the entrance of the fjord it may register 80 inches, but at the head of the fjord only 16 inches. The habits and character of the people were described, and the death-rate, aside from drowning accidents, is very low. Acute bronchial catarrhs are common, and tuberculosis holds the prominent place in mortality. Leprosy is more prevalent than in other European countries and is controlled by the state. Lepers are not allowed to marry.

In spite of a steady stream of emigration to the United States, the population of Norway has doubled in the last fifty years. The people are industrious, phlegmatic, sober, religious and contented, and a few weeks spent among them and their everlasting hills would be the best tonic for a restless, skeptical, neurotic invalid.

DR. GUY HINSDALE, of Hot Springs, Va., read a paper on

THE METEOROLOGIC AND HYGIENIC ASPECTS OF THE FLOODS IN FRANCE, IN 1910.[1]

DISCUSSION.

PROF. WILLIS L. MOORE, Chief of the United States Weather Bureau, Washington, D. C.: The paper just read was of interest to me, and I will confine my remarks to the portion that treats of the cause of the floods of the Seine. The paper states that there was a great flood in 1658. In 1658 the Seine was practically a wooded area; the economic conditions were quite different from what they are now; the valley has been divided up since and forests have been cleared away and in place of the covering of trees, there has been substituted, not a denuded region (a term so often misapplied), but another form of vegetation, — growing grass, grains, fruits and flowers. And instead of the forest area with its deep roots penetrating into the substratum, and in a way cultivating the soil, we have substituted a broken, permeable soil which is plowed and cultivated many times. Now it is significant that when the valley was entirely wooded, the flood of 1658 was higher than the recent flood. It is the history of the Danube, of which we have very good records for eight hundred years, that as the forests have disappeared and as the valley largely has been changed by the work of the husbandman from a forest area into a broken, permeable, cultivated area, the floods have consistently, persistently decreased.

The records of the government engineers of France for two hundred and fifty years, dividing that two hundred and fifty years into five fifty-year periods, show a steady decline in flood intensity in the valley of the Seine with each fifty-year period. We have records of no such length of time in this country, but for the periods for which we have records, measurements of flood heights show that there is no increase in the average height of floods or the extreme height of floods; neither is the low water lowered during the summer as the result of the cutting away of the forests. Now, this seems almost like heresy, like sacrilege of a dearly beloved theory, to express any such opinion. If you will look in the Encyclopedia Americana you will find an article of some nine or ten pages on climatology of which I am the author, in which I state that it is my opinion that there has been no change on any broad scale in the climate of the United States as a result of deforestation; that there is a better economic employment of the rain-fall by the forests; and that the cutting away of the forests augmented the floods; that they maintained better the low-water stages during dry periods, by restraining the precipitation and allowing it to slowly percolate into the soil, holding it back, decreasing evaporation. Why did I write that opinion? Simply because what I said seemed to be so truthful that it did not require demonstration.

For the last few years I have come against the most stubborn thing for a man with a theory to encounter. I have faced some bold facts that compel me to revise the old theories. Within the past several years I have discussed carefully the precipitation on many of the watersheds of great rivers of the United States. I have studied the gauge readings on these streams, and I find that there is no increase in flood intensity.

So I have been forced to the conclusion that the hand of the husbandman has transformed these valleys, these lovely plains, into as good a conserver of the moisture as the forests themselves. Here is where we have made most of our fundamental errors regarding the effects of the forests upon floods. You say, we should reforest the steep slopes of the mountain regions up at the headwaters of the mountain streams to restrain the flood. But the rain that falls on a square foot of the bank of the main stream is just as potent as same amount falling upon an equal area fifty miles away at the head waters of a tributary. It is the precipitation that falls on the total area of the basin, and if you will examine any considerable river system, — any important tributary to any considerable river system, — you will find that the area of the steep slopes in the mountains does well if it equals 5% of the total area of the catchment basin. It is the precipitation that falls on the lower reaches considerably away from the mountains that mainly causes floods, and if forests do restrain the floods, then it will be necessary for us not to reforest the area of the steep slopes of the mountains, but to reforest the great plains, and turn this region back into a condition where it will be the haunts of wild animals.

Now, then, I take the position, and have voluminous data in my possession to sustain it, that the forests really do not restrain the floods. Why? you say. Do you mean to tell us that the run-off from an open plain is as great as the run-off from a thickly wooded area? Now I answer, it depends on what you mean; it depends on which run-off you mean. Is it the run-off from a moderate rain or a shower, or the run-off from a protracted rain. The run-off from the open may exceed that from the forest in the case of showers because the forest may restrain and contain the entire rainfall when it is moderate and there be no run-off, and none of it may get over into the channels of streams, and the function of the forest is to make the low-water lower. Take two areas, one smooth as glass and the other covered by a forest; just so soon as both surfaces are saturated, the run-off is equal. Now no floods occur, barring the little, tearing, rushing creeks down steep declivities, until after all surfaces are saturated. Therefore the run-off is equal from the two surfaces at a time when floods are produced and the forest interposes no obstruction.

I have taken the average height of the Ohio River at Cincinnati for thirty-eight years. I have taken the exact gauge reading each day, and have taken the average of it for the thirty-eight years, and I will say to you that the figures stand there in my report; they are from the original records of the Weather Bureau; they show that the average for the last nineteen years is practically the same as for the first nineteen. I have taken the average high water for the four wet months of the principal rivers of the Ohio valley, including the Ohio, Tennessee and the Cumberland, and I find that the average high water for the four wet months is no greater for the last half of this period than for the first half. I have taken the average low water for the four dry months on these several rivers, and I find that the average low water shows a slightly higher flow for the

[1] See issue of this JOURNAL for Aug. 18, 1910.

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last period than for the first. I have then taken two stations on the Tennessee, three on the Cumberland and five on the Ohio, and I have counted the number of days that the water was at flood stage for twenty-eight years; so for a period of twenty-eight years I counted the exact number of days at these five stations that the river was in flood. I did not assume some imaginary stage as a flood, as three different investigators who have discussed our data have done. I counted only actual floods, and I found that for the last fourteen of these twenty-eight years there was an average of forty-three days less each year when the rivers were at a flood stage than in the first fourteen years. Now I do not cite that fact to you as an evidence that there has been any such marked decrease in flood intensity as a result of the cutting away of the forests, as this statement would seem to indicate. I quote it to contravert statements of many of those interested in forestry that there has been a marked increase in flood intensity, and I quote it as a warning against making general conclusions from inconsistent or too limited data. The heavy rainfall that occurred at the time of the Johnstown flood came in the first fourteen years of this period. That enormous precipitation gave such a greater number of flood days in the first of this fourteen-year period that while the result sustains my position, I say it is hardly fair to the other side, for it is improbable that for a long time to come we shall receive such an enormous precipitation in either one of two periods that may be under discussion. Therefore, while there has been a marked decrease in flood intensity in the Ohio Valley, without a shadow of doubt, in the past fourteen years in comparison with the previous fourteen years, I do not believe that such decrease will show in the next fourteen years as compared with the present fourteen years; and I am satisfied that a proper grouping of the data will not show any such increase in flood as three different investigators think they have found. These men have taken 20 feet as a flood stage for all of the gauge readings that they have discussed, when it is a fact that at no station in the Ohio River basin is the river at flood until it passes many feet above the 20-foot stage. Now, then, if an investigator is investigating for the purpose of finding whether our floods have increased, and assumes a perfectly arbitrary stage of the river to indicate a flood, which every person living on the banks of the river knows is not a flood, what shall we say of the conclusions that are reached by such a line of reasoning?

Now there are great national problems that involve large expenditures and that seriously affect the economic policy of this nation, and will affect it for a long time to come, that are to be settled by a discussion of this problem of the floods of the rivers, and the effect of the forests upon the flood of the river. Shall it be settled by resolution of well-meaning people in open convention, or shall it be settled by the cold reasoning of men who have the statistics before them? So far, we have been educated to much that we will need to unlearn in regard to the forests and their effect upon the economic questions of the United States. I am of the opinion that long before the forests of the United States are exhausted, wood will only be used for ornamental purposes; cement, steel, iron, broken stone, all these things, are coming more generally into use. Cement houses will be of general construction. Think of the better sanitary conditions, — cooler in summer, warmer in winter, no fire loss, no heavy burden of insurance; indestructible, imperishable, — structures that practically will stand forever. Certain it is that non-combustible material is coming into use very rapidly. Long before the coal supply is exhausted, — and geologists will tell you that they can see ten thousand years' supply visible now, and they know not how much more is hidden, — but long before the coal supply is exhausted, I predict that by a wise policy of conservation, such a policy as is undoubtedly being strongly put forward by the man in the White House to-day, every natural water right will be protected and none have been sacrified under his administration, — not one. Kindly deal in facts, not mis-statements. Long before our coal supply is exhausted, by a rational conservation that shall be formulated by the engineers of the nation, by the men who are working and controlling the streams, building reservoirs, building water works, building railroads, such men will formulate a policy that will be carried out by actual working scientific men who are competent to handle these problems, and in time the rivers of the United States will heat and light your places of habitation; they will do the work of the nation; these streams, as they run down from their sources to the sea, will be utilized to heat and cook and do all the labor practically of the nation. By that time you will need no coal; by that time you will need no lumber. Any way, whether we need the lumber or not, we should not attempt to solve an economic policy by fallacious reasoning or endeavor to sustain a truth by a falsehood. The government records do not sustain the position of the enthusiasts of forestry — and there are many noble men and women concerned in forestry, and I bid them Godspeed in everything they can do to protect the great national resources, and to protect forests and grow them where they ought to be grown, and that is not where grains and fruits and flowers should grow. It is a crime to devote any acre of land in the United States to forestry that can and should grow food for the American people. I love the trees, but I love man more; I love the fruits and the flowers better, and the cereal crops better. Now we want these problems settled by such men as are gathered here, thinking men who have no personal motives, who are simply struggling as you are for the welfare of America. We want the truth, and we want a policy that shall be founded upon the truth, not simply upon undemonstrated theory.

Dr. W. F. R. Phillips, of Washington, D. C.: I think Professor Moore in his remarks has hit the nail very much on the head, and certainly his confessions as to what he said ten years ago or more is the same confession that I have to make. In a short article that I prepared for the Reference Handbook of the Medical Sciences, I stated the effects of forestation on rainfall. I did then just exactly what so many of us do — worked on the preconceived idea, and did not work with the facts. Now we medical men know what it has meant to us, every now and then, to take something for granted, but never go into the facts. We know how many of our textbooks are filled with things that are studied by us and that we have found later were not so. Some one has said that we are beginning to learn that the most dangerous knowledge that we have is not the knowledge of those things that we know are not so, and that which we accept as so and later turn out to be not so. It is a credit, I think, to the genius of that great scientist, the man who probably did more than any one else to give us a clear idea of the power of science — Darwin, in his voyage in the *Beagle*, going to parts of South America — that he saw there evidence of vegetation and trees that had disappeared; and instead of saying that the arid regions had come there because the trees had disappeared, he said that the rain had ceased falling and that is why the trees disappeared. Wise observation from the past, unnoticed, and I doubt if very many of you recall it here to-day, and yet we find that that great observer took a pretty good grasp of the situation then when he was floating around the world as a young surgeon on the *Beagle*.

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Now there is another thing that, I suppose, if we had stopped and thought about it, would have put us on the right track of the relation of forestation to rain-fall, and especially to the run-off. Every person working in arid regions where irrigation has to be practiced knows that he gets the best results and keeps the water longest near the surface and, therefore, around the roots of his trees when he works that soil. I remember in Southern California, when the Climatological Society took its trip there, that, in going through the orange groves and vineyards and orchards, we were told that when they turned the water on it was necessary, in order to keep the soil moist, to keep the surface broken up, plowing it, hoeing it all the time. They had found out there that working the soil kept the soil moist, kept the water more on the surface of the earth and gave better results, and we might have thought why it was if we had just stopped for a moment to consider what it means, this breaking up of the soil. Every one of us who has had to work on a farm, and many of us probably have, has noticed in digging post-holes that as we dug down into the ground we saw little openings, veins running all around through the soil, and in watching these post-holes or walls, as many of us have, we saw that during wet weather water was pouring out of these veins. Now the result of breaking up six inches of soil on top was simply to break up the beginnings of these veins and, therefore, to delay the percolation and drainage of the water down into the subsoil, and we know to-day very well that if we want to keep the surface soil wet and want to stop evaporation from the surface, we must constantly break it up, otherwise capillary tubes are formed in the soil. So the very fact of cultivating the soil keeps more water in the soil and prevents a rapid run-off. Now, going back a little, we can demonstrate the facts; we can see that, instead of deforestation increasing floods, it really decreases them and that forestation really should increase them, because it means soil that is not broken up and, therefore, has these larger veins which carry the water down more rapidly to the subsoil and to the impermeable substrata and thence off into the river.

The effect of floods upon health, of course, is one that we are most interested in, and is one that we cannot very well discuss, that is, we cannot say very well how floods *per se* are going to affect our health at present because we have learned that a good many of the diseases, certainly the most injurious to us, come from things that the flood has directly nothing at all to do with. The fact is that we clean up after a flood. It probably will be shown in this Paris flood that the flood has, hygienically, been of not as much significance as a drought.

DR. J. H. ELLIOTT, of Toronto, Canada: This discussion has cleared up many things which were very indistinct in my mind, but there is one question I would like to ask Dr. Phillips in the absence of Professor Moore; they have explained why deforestation does not increase floods with a heavy precipitation of rain; nothing has been said of the floods due to the melting of snow. During the winter in Northern Ontario and the Northern States average precipitation of snow is about one hundred inches in the open and cultivated areas. This runs off very rapidly in the spring, as we all know, and give us spring floods. Is the flood not less in the forested area where the snow melts much more gradually?

DR. W. F. R. PHILLIPS, of Washington, D. C.: In answering the question, I would say that in case of snow it would be apparently a fact that the forests, by the shade that exists there, not very much shade, not very dense, but that such as does exist there, would interfere to a certain extent with the rapid melting of the snow. Consequently it would have the same effect as that of a gradual rain-fall producing a state such as accompanies a light rain extending over many days as contrasted with that of a rain that came up and lasted only a day or two days. We could conceive that under these conditions the per cent of forest, or anything that would shade the snow, would act in the same manner. But I think that the point made by Professor Moore was that the greatest part of the effective rain-fall was that which fell near the stream and not that which fell at a long distance. I think every one of us who has had opportunities to watch the run-off in small streams, to watch it after a thunder storm, has observed that the highest water is reached a few hours after the thunder storm and not many hours after. In other words, it shows that the run-off has come from a practically short distance, it was the near run-off. The other run-off would have come from the distant mountain, and it takes days for that water to reach the streams and produce floods; that the run-off that makes high water in a stream is really from that near it, and, therefore, the effect, so far as the practical question is concerned, of the forests in retarding the melting of the snow that existed in them is negligible.

DR. C. L. MINOR, of Asheville, N. C.: I rather fear to rise and speak after the scientific remarks of Professor Moore and Dr. Phillips, but there is one thing which I should like to ask the doctor. In our mountain region of Western Carolina the hills are covered with many beautiful forests, although these are less with the advance of the lumberman. All through these forests there is a dense, thick, undergrowth with laurel and rhododendron and moss and dead leaves still, probably, as primitive as it was in the days of Moses. At any time of the year if you go in these forests and examine the soil under these trees you will find it damp and moist, and when the rains fall they do not rush out from the woodland fastnesses (although the mountain streams, it is true, swell), but to an ignorant layman seem to be taken up and held back by the undergrowth, which in turn is protected by the forest in which it grows. But where our lumbermen have been active and have bared our hillsides, as they have also in parts of Central Pennsylvania, the soil is not moist save immediately after a rain, the streams do not run even in the driest weather as they do in the forests, but we find only dry beds, and when the rains come you see the water tearing down the hillsides, gullying them, washing them out, not sinking into the soil, which will be bone dry the day after such a rain, but going down to swell our rivers and raise them to flood height, destroying the property along their banks.

Such are the results of my ignorant observations, but after I hear Professor Moore and Dr. Phillips, who tell us that the forests can have no possible effect of this sort, I wonder if it would not be wiser for us to bare all our hills of trees, to get rid of all our forests and to trust to the professor's theories to protect our lowlands and to give a steady supply of water to our mills.

DR. W. F. R. PHILLIPS, of Washington, D. C.: I would suggest that if the forests are in the same condition that they were at Moses' time at the present time, and have been so during the interval, if he could only give us the records and actual measurements throughout that long period we might change our views again. I know I have changed mine, and the Chief of the Weather Bureau has changed his; we have both changed our views. I think the explanation, however, of Dr. Minor's difficulties could be found. First, before I would attempt to explain things, I would ask him to bring the records, the actual measurements, because sometimes local floods occur simply because a very heavy thunderstorm occurred just over the region in

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question, and it may be a coincidence that two or three storms occurred over a particular region, and they got a flood there; also when trees have been cut away you observe these floods more than when the trees are thick. If they are just as Moses left them, who has been there to see whether the storms are high or low? If the doctor will have the measurements given to us, we will try to explain it. I know — we all know — that, just working on your impression, taking some man's impression for a fact, is not satisfactory, and every now and then we have to go over and change our impressions.

Dr. C. L. Minor, of Asheville, N. C.: Then you will admit that the water runs off faster from these forest-clad hilltops than it runs off the open?

Dr. W. F. R. Phillips, of Washington, D. C.: In about half an hour after a heavy rain the surface soil is all permeated and for all intents and purposes it is the same whether it is forested or deforested. A half an hour of rainfall and the run-off will depend entirely upon the slope rather than anything else.

Dr. Minor: It seems to me we should pray for rain and take the trees up at the foot of the hills as they are washed out.

Dr. Hinsdale: I only wish to thank Professor Moore and say that I appreciate his coming here to add so much to the interest of this subject which I introduced.

*(To be continued.)*

## Book Reviews.

*Bier's Textbook of Hyperemia, as Applied in Medicine and Surgery.* By Prof. Dr. August Bier, of Berlin. Only authorized translation from the sixth German revised edition by Dr. Gustavus M. Blech, Professor of Clinical Surgery, Illinois Medical College; Dean and Professor of Surgery, Practitioners' School of Medicine; Surgeon-in-Chief, Practitioners' Hospital, Chicago; Member American Medical Association, Association of Military Surgeons of the United States, etc. With 39 illustrations. New York: Rebman Company.

Bier's "Hyperemia" was popularized in America by Meyer and Schmieden, the authorized exponents of Bier's work. We doubt if Bier's own book in its English dress will add greatly to interest in his methods. Whether so or not, this book sheds light on the man, on his personality, his convictions, his enthusiasm and his egotism. The translation is fair, but the book itself is prolix and the style labored. The best part of it is the introduction, — a readable, philosophic treatise on biologic science and the application of hyperemia to morbid conditions. The next most interesting section of the book is an informing appendix of ten pages, thrust into the middle of the volume, and dealing with the "influence of the total blood for curative purposes." In this little appendix the author reviews luminously the status of cellular pathology and the new humoral pathology.

The book is an octavo of four hundred and thirty-nine pages. Half of it deals with the general principle of active and passive hyperemia; half of it with the practical application of hyperemia to special lesions. As a whole, the book is extremely informing and will be read with pleasure by earnest students of surgical literature.

*Lectures on Surgical Nursing.* By E. Stanmore Bishop, F.R.C.S. Eng., Honorary Surgeon, Ancoats Hospital, and Gynecological Surgeon, Jewish Memorial Hospital, Manchester; Member of Council, Obstetrical Section, Royal Society of Medicine. Illustrated. William Wood & Co. 1910.

This is a delightful little pocket manual full of information for the surgeon as well as for the nurse. It is a collection of the author's addresses to nurses, and tells nearly all that the nurse can wish to know on the subject through the medium of reading. Moreover, the book itself is most readable; it is short, pithy, luminous and pleasant.

*Practical Suggestions in Borderland Surgery.* For the Use of Students and Practitioners. By Gustavus M. Blech, M.D., Professor of Clinical Surgery, Medical Department, Loyola University; Director-in-Chief, Illinois Legion American Red Cross; Surgeon-in-Chief, Abraham Lincoln Hospital, Chicago, etc. Philadelphia: Professional Publishing Company. 1910.

This is an interesting little brochure for students and general practitioners. It is rendered somewhat irritating by a needlessly laudatory publishers' introduction. It is extremely well conceived, however, and is carried out in an excellent, liberal spirit. Blech protests that the noble art of surgery is being debased by hosts of hasty and incompetent operators. "This is a surgical age," he tells us; "the recent graduate hangs out his shingle, and from now on has but one aim, — to operate; the exceptions only prove the rule. Men like the late Senn have tried in vain to stem the tide of this gigantic wave, which he has aptly called *furor operativus*." The author continues through eleven admirable chapters to discuss types of medical and surgical ailments to point out those which are suited to various therapeutic measures, and to describe operations suitable to the various lesions. He debates especially the dangers incident to operations in general, and their reduction to the minimum; contra-indications to operations in general, and the surgeon as a factor in successful surgery. The book is cheaply constructed, but is sold for $1.50, and is well worth the reading.

*The Practitioner's Case Book.* Prepared and arranged by the editorial staff of the *Interstate Medical Journal.* St. Louis: Interstate Medical Journal Company. 1910.

This book provides the busy general practitioner with a convenient and systematic form for recording and preserving clinical histories. The appended charts should be particularly useful for graphic indication of the data of physical examination.

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THE BOSTON

# Medical and Surgical Journal.

THURSDAY, NOVEMBER 3, 1910

*A Journal of Medicine, Surgery and Allied Sciences, published at Boston, weekly, by the undersigned.*

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## THE CAPTAIN OF THE HOSTS OF DEATH.

THE bulletin of the United States Census Bureau on mortality statistics for the year 1909, recently published, makes rather interesting and in some respects discouraging reading. In spite of all that has been said and done in the conflict against tuberculosis, that disease still stands first as a cause of death in this country. The registration area, from which the figures are taken, represents over 55% of the estimated total population. In this area, among "gainfully employed or occupied males," pulmonary tuberculosis caused 14.8% of all deaths, heart disease 11.9%, accidental violence 10.5%, Bright's disease 8.5%, pneumonia 8%, apoplexy and paralysis 7.3%, cancer 5.5%, suicide 2.6% and typhoid fever 2.2%. Among occupied females the percentages of causation were, pulmonary tuberculosis 21%, heart disease 10.3%, cancer 8.1%, Bright's disease 7.3%, pneumonia 7%, apoplexy and paralysis 5.9%, accidental violence 3.2%, typhoid fever 2.8%, suicide 1.6%. Deaths from cardiac and renal disease, then, from pneumonia and cerebral hemorrhage, are slightly commoner among men than among women; deaths from tuberculosis and cancer are nearly 50% commoner among women than among men; and among men deaths from suicide are 50% more frequent and deaths from accident over 200% more frequent than among women. These figures for tuberculosis make it seem as though the efforts of the past ten years to suppress this disease had been almost of inappreciable effect. With reference to occupation, it appears that printers, lithographers and pressmen have the highest mortality from tuberculosis, amounting to 51.5% for the age-period from twenty-five to thirty-four; farmers for the same period have a mortality from tuberculosis of 26.2%, and machinists (the lowest) of 25%. With reference to age, it is found that for all occupations the highest mortality from tuberculosis occurs in the decade from twenty-five to thirty-four; after which there is a rapid and accelerating decline. The much greater prevalence of tuberculosis among women than among men is noteworthy. There seems no obvious or satisfactory reason for the relatively high immunity to tuberculosis of machinists, whereas that of farmers is easily self-explanatory on account of their outdoor mode of life. All these facts must give us pause, and should make us realize that perhaps we are still far from understanding the real nature of susceptibility to tuberculosis, and that the progress of the natural history of some diseases may be far less influenced than we are wont to imagine by our hygienic, prophylactic and sanitary measures.

## INCREASE IN DEATHS FROM HEART DISEASE.

DR. GUILFOY has just issued a statement in which he calls attention to the fact that twice as many persons, in proportion to the population, are now dying from diseases of the heart in New York as thirty-three years ago. In 1876 there were 1,131 deaths from this cause in the city, a death-rate of 82 per 100,000 of the population, and last year, 6,639 deaths, a ratio of 161 to the 100,000. The figures thus far in 1910 indicate a further increase when the vital statistics of the year are complete. Every year the death-rate from cardiac disease is increasing, and unless something is done to check this it will become more of a menace than tuberculosis or acute respiratory diseases, which now lead as the principal causes of death. At the present time it ranks as third in importance, and what is true for New York is for the most part true of the country at large. As Bright's disease is so frequently associated with heart disease, it is essential to consider this in connection with the latter. Here also the death-rate has doubled in New York. In 1863 there were only 640 deaths from this cause, a death-rate of 53 per 100,000, while in 1909 these were 4,655 deaths, a rate of 113 per 100,000. As with heart disease, the increase has been the most marked in the last twenty years. As to the causes of this increased mortality, Dr. Guilfoy assigns

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an important part to the grippe bacillus, to which he attributes many deaths from cardiac disease. Of far more importance, however, are the present conditions of living. In a large proportion of the population it is the more luxurious mode of life; eating too much nitrogenous food, drinking too much and taking too little exercise. In other instances life is more intense and the struggle for existence more difficult. In a word, people are living "faster" than they did twenty years ago. He is of the opinion that if they would eat less, drink less and exercise more in the open air, the death-rate from heart disease would take a decided drop.

## SUCCESS IN ATHLETIC SPORTS.

In a recent paper before the American Academy of Physical Education Dr. Dudley A. Sargent, of Cambridge, undertook to explain the usual superiority of women over men in swimming on the basis of their better conservation of heat, owing to their usually greater proportion of adipose in proportion to body weight and bulk. On the same basis he would explain the physical superiority of girls to boys during a certain period of adolescence, and the familiar ability of women to endure cold in evening dress better than men. So far as the latter point goes, it must be remembered that habit probably plays a large part. The converse of Dr. Sargent's first proposition, however, seems the truer form of statement. The professional male swimmer may be inferior because he trains down too lean, like a land athlete who "gets fine" or "goes stale" before an event. Probably overtraining, with its loss of weight and associated nervous strain, is more often responsible for the failures of male athletes than any other one thing.

The athlete, in any case, is an artefact, a man unnaturally developed to make an abnormal physical exertion. The reason the English succeed better in sports than any other nation is because they train for them the least and take them merely as pleasurable incidentals in an active outdoor life. It has been said recently that a good athlete may make a poor soldier, but that a good soldier will generally make a good athlete. Discipline of temperament is worth more than specific physical training. In the long run, the person to succeed in any test of endurance, be it man or woman, will be the one who in addition to an organically sound and normally exercised body, whether stout or lean, has an orderly and persistent mind to govern it.

## DANGERS OF EPIZOOTIC ANTHRAX.

The occurrence last week of a case of anthrax in Boston recalls the serious possibilities of even the sporadic presence in a community of this fatal disease. An example of these dangers was shown in the outbreak of anthrax at Chicago during July and August of the past summer. The infection appeared among the cattle of about twenty farms in three nearby towns from which a large part of the milk supply of the city was derived. Eighty-seven cows died of the disease. Immediate measures were taken by the Chicago Board of Health to prevent spread of the infection by the milk, with the result that a general epidemic was averted. One of the farm owners did become infected and died. The measures adopted are described in a recent bulletin of the Board of Health. All sick animals were isolated, all exposed animals quarantined, and all others treated with standard anthrax vaccine. All dead animals were burned or were buried eight feet deep, the grave and ground about strewn with quicklime and sprinkled with strong corrosive sublimate, and the site fenced to prevent other animals from grazing there. The milk from every infected herd was withheld from market until a suitable period after the last death from the disease. That these measures were effective is shown by the prompt and complete suppression of the epizoötic. Their adoption might at any time become necessary in our own community in the event of the appearance of anthrax among cattle of the vicinity.

## CONTINUANCE OF THE DROUGHT IN MASSACHUSETTS.

In recent issues of the Journal we have given some account of the water famine in Palmer, Mass., and of the measures taken to meet it. Meantime the drought in Massachusetts has continued and several other towns are now threatened with serious scarcity in their water-supply. This deficiency extends also to other New England states. Not only has the shrinkage of streams diminished the amount of drinking-water, but in some cases has caused the shutdown of large mills from failure of power, with consequent non-employment and hardship for hundreds of mill-hands.

In many places artesian wells have been sunk to supplement the drinking supply and guarantee against absolute famine. At Spencer, Mass., a special meeting has been called to discuss the situation, which is considered one of real gravity.

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At Peabody, Mass., the inhabitants for a time drew on Suntaug Lake, or Humphrey's Pond, which supplies the neighboring town of South Lynnfield, but the rapid decline of water in this lake to 100 feet below high-level mark led them to desist, and they have now established an auxiliary pump at Spring Lake.

The total rainfall in Boston this year thus far is only 22.2 inches, an amount far below the average; and although this city is of course in no immediate danger, the situation outside the metropolitan district may become serious unless there is considerable precipitation before the onset of winter.

## SUBSTITUTES FOR THE PUBLIC DRINKING CUP.

The mere passage and literal enforcement of a good law may avail little unless the spirit of its provisions be also carried into effect. It is now a month since the regulation went into force in Massachusetts forbidding the use of public drinking-cups. Such cups seem uniformly to have disappeared, but adequate substitute for them has often not been provided. In some places bubbling fountains have been established; in a few, individual paper cups are obtainable; others have cut the Gordian knot by removing the water-cooler altogether. In many instances, however, the public cup has merely been taken away and the water left, with the natural and inevitable result that those who wish to drink apply their mouths to the faucet and ingest the fluid by suction, a practise even more disgusting and dangerous than the use of the common drinking-cup.

No doubt in many of these places other provision will soon be made. Others may be waiting to see which way public opinion will turn. Meantime the hygienic, or non-hygienic, result is the same. On the whole, the slot-machine method of furnishing individual paper cups at public drinking places seems the best, but some method there should be. Statutory abolition of the common cup should be accompanied by provision of a suitable substitute therefor.

## DR. GRENFELL AND HIS WORK.

Few modern stories read more romantically than that of Dr. Grenfell's labors among the natives of Labrador and the north. His life among them includes not only all the varied excitements of a doctor's experience, but those of a hunter, of a seaman and of an explorer as well. Among the primitive people with whom he deals emotions are simple, but genuine and poignant; and he has opportunity, as we of more civilized environment do not to the same extent, to see man and nature in elemental relations. That such experience should have not only increased his faith and deepened his ardor of service is a tribute both to him and to humanity. The picture which he draws, in a recent newspaper article, of hardship and disease among the "desolate ice-isles of northern seas" is thrilling in its suggestions of adventure and heroism. Dr. Grenfell is one of those figures who have appeared at every stage of our racial progress exemplifying the indomitable roving adventurous instinct of our people associated with the highest ideals of devotion to duty and to the romance of righting wrong and relieving human distress.

## MEDICAL NOTES.

Plague in Venezuela. — Report from Venezuela states that four new cases of bubonic plague have occurred during the past week at Caracas, but that there is no spread of the infection elsewhere in the state. In Caracas the theaters and other places of assembly have been closed and all public meetings forbidden for the present.

Opium Sandwiches in Chicago. — A new method of evading the law relative to the sale of opium is reported from Chicago, where the proprietor of a Chinese restaurant has recently been discovered purveying sandwiches containing the drug to habitués who had difficulty in obtaining it in the more usual form.

Repeated Multiple Pregnancies. — It is reported from Cleveland, Ohio, that, on Oct. 21, Mrs. William G. Clark of that city gave birth to her third set of triplets. She has been twice married. By her first husband she is said to have had two pairs of twins and one set of triplets, and by her second she has had two other pairs of twins and two sets of triplets, making in all seventeen children in seven pregnancies. The sexes are not stated. Mrs. Clark was herself the only girl in a family of twenty-one children.

Health Caravans in England. — During the past season a so-called health caravan has been sent from town to town through certain parts of England by the Women's Imperial Health Association of Great Britain, giving lectures and practical demonstrations, illustrated by the cine-

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matograph, on various topics of hygiene. The work of this caravan, the *Amora*, has been so satisfactory that two others are to be sent out, one in London and one in the eastern counties.

Communicability of Fish Cancer. — On Oct. 27, seven dogs, habituated to a fish diet, were sent by the bureau of fisheries at Washington, D. C., to the hatcheries in the state of Maine for use there in experimental study of cancer. The dogs will be fed on cancerous fish in the effort to determine whether fish cancer be communicable to other animals through the medium of food.

Organization against Tuberculosis. — The rapid spread and elaboration of the campaign against tuberculosis is illustrated by comparison of the numbers of institutions established for its prosecution. In 1904 there were in the United States 133 sanatoria and hospitals for tuberculosis, 32 special dispensaries for its treatment, and 39 anti-tuberculous organizations. There are now over 400 such sanatoria and hospitals, over 300 tuberculous dispensaries, and 450 anti-tuberculosis associations.

Some Living Centenarians. — Four of the inmates of the Home of the Daughters of Jacob, in New York City, are alleged to be over one hundred years old. At a recent fire in the institution these reputed centenarians, three women and one man, were all safely rescued.

Mrs. Lydia Shepard, of Millville, N. J., is said to have been born on Oct. 22, 1809. She is reported to be in excellent health and does active work about the house.

Mrs. Caroline Jones Hudson, of Templeton, Mass., is said to have been born on Oct. 30, 1808. Genealogic records indicate that several members of her mother's family were also centenarians. It is stated that she had sixty-eight cousins, of whom only one still survives.

Relative Percentages of Suicide. — Statistics recently published in Kobe, Japan, compare the frequency of suicide in that country with that among some of the occidental nations. During the twenty-two years from 1887 to 1908 inclusive, the average annual suicide-rate per million inhabitants was, in Denmark 253, in France 218, in Switzerland 216, in Prussia 197, in Japan 184, in Austria Hungary 159, in Belgium 122, in Sweden 119, in Bavaria 118, in Great Britain 80, in Norway 80, in Holland 58, and in Italy 52. Undoubtedly suicide is increasing in every country where civilization is progressing. Interesting as these figures are, they however afford no explanation of the reason for the very high percentage in Denmark or for the relatively and gratifyingly low percentage in England, Norway, Holland and Italy. Probably the increase of suicide, like the decline of the birth-rate, depends on subtler facts of racial character than can be analyzed by statistics.

The Cholera Epidemics. — The Italian epidemic of cholera seems to be distinctly waning. During the week ending Oct. 29, 48 new cases and 28 deaths were reported. News from Victoria, B. C., however, states that a serious epidemic of the disease has broken out in central Japan. Several hundred cases have been reported at Kobe, and over 100 are said to be now under treatment at Osaku. In the United States no more cases have occurred, though several suspects have been held under observation. For the purpose of tracking possible cholera carriers, the immigration officials, acting on the counsel of Dr. William K. Rucker, of the United States Public Health and Marine-Hospital Service, have adopted the plan of registering on a special card the intended destination of every immigrant landing here from an infected port. These cards, forwarded to state and local boards of health, afford means of keeping track of every immigrant, in the event of a possible subsequent recrudescence of a latent infection.

Boston Charity in Ireland. — Over a year ago the Countess of Aberdeen, whose charitable zeal has done so much to relieve and educate the Irish people, visited Boston for the purpose of raising funds for a tuberculosis preventorium, projected by the Women's National Health Association of Ireland. This Sutton Holiday Home and Preventorium was completed and opened in August, 1909, and its first annual report shows that during the past year it has received 125 inmates,—75 adults and 50 children. It is situated on a hill near Howth, a suburb nine miles from Dublin at the northern angle of Dublin harbor, overlooking the rugged Irelandsey or Isle of Ireland, which faces Anglesey, across the Irish Sea. The site is attractive and the climate salubrious, and the institution gives opportunity for the poor and ill-fed from the overcrowded districts of Dublin to obtain for a time rest, good food, fresh air and training in the desirable hygiene of life. No patients are received except those who are free from tuberculosis but whose

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environment and physical condition make them seem susceptible subjects for infection. It is pleasant thus to learn of the good work of an institution to which large subscriptions were made by Boston charity.

## BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston.— For the week ending at noon, Nov. 1, 1910, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 36, scarlatina 46, typhoid fever 19, measles 7, smallpox 0, tuberculosis 52.

The death-rate of the reported deaths for the week ending Nov. 1, 1910, was 16.49.

Boston Mortality Statistics.—The total number of deaths reported to the Board of Health for the week ending Saturday, noon, Oct. 15, 1910, was 205, against 181 the corresponding week of last year, showing an increase of 24 deaths, and making the death-rate for the week, 15.94. Of this number 109 were males and 96 were females; 200 were white and 5 colored; 138 were born in the United States, 64 in foreign countries and 3 unknown; 51 were of American parentage, 126 of foreign parentage and 28 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 33 cases and 3 deaths; scarlatina, 9 cases and 0 deaths; typhoid fever, 30 cases and 2 deaths; measles, 4 cases and 0 deaths; tuberculosis, 42 cases and 22 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 25, whooping cough 2, heart disease 31, bronchitis 3. There were 16 deaths from violent causes. The number of children who died under one year was 50; the number under five years, 64. The number of persons who died over sixty years of age was 46. The deaths in public institutions were 83. Anterior poliomyelitis, 1 case and 1 death.

Of the above infectious diseases the following were non-residents: Consumption, 3 cases and 5 deaths. Scarlet fever, 1 case. Typhoid fever, 1 case.

Deducting deaths of non-residents, the total is 174 and the death-rate is then 13.53.

Free Hospital for Women. — Invitations have been sent by the Trustees of the Free Hospital for Women for the inspection of the hospital buildings this afternoon from two until six.

Fines for Illegal Sale of Milk. — In the Roxbury District Court last week six local dealers were fined a total of $225 for continuing to offer milk for sale after their licenses to do so had been revoked.

A Week without Death from Diphtheria or Scarlet Fever. — It is worthy of notice that, during the week ending Oct. 22, no death from diphtheria or scarlet fever was reported to the Boston Board of Health. It is several years since a week has elapsed without a death from either of these diseases in Boston.

Penalty of Breaking Quarantine. — In Malden, Mass., last week a patient with diphtheria, who had been duly quarantined at her home, refused to stay indoors and attempted to travel on an electric car. She was promptly removed by the board of health to the local hospital for contagious diseases.

Addition to Milford Hospital. — It is announced that on account of the present overcrowding of the Milford (Mass.) Hospital, which was established some years ago by Mr. and Mrs. Eben S. Draper, of Hopedale, Mass., Mr. Draper has recently offered to provide for the erection of a new ward to accommodate twelve patients and five attendants.

Continued Condemnation of Oyster-Beds. — In recent issues of the Journal we have noted the condemnation by the Rhode Island Board of Shellfish Commissioners of various oyster beds in that state. During the past week nearly 200 more acres of beds have been condemned along the Kickomesit River, near Fall River, Mass. It is stated that the sewage from that city is the source of their pollution.

Calves Condemned at Brighton. — At the Brighton slaughter-yards last week, the agents of the Boston Board of Health condemned, as unfit for food, 82 out of a shipment of 84 calves. Many of these animals were said to be only two or three days old. This is said to be the first instance in Massachusetts of such condemnation of bob-veal.

A Second Hookworm Case in Boston. — A second case of uncinariasis was discovered in Boston last week in the person of a young Chinese immigrant, who had come from Hongkong to Vancouver and thence to Halifax and had arrived in Boston from the latter city a few days ago. The patient has been sent to the Carney Hospital. His infection with the hookworm must of course have occurred in China.

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A Centenarian. — Mrs. Mary Turcotte, who died on Oct. 23, at Brockton, Mass., is said to have been born on Oct. 1, 1810, at Lavaltorie, P. Q., Canada. She was the mother of five children, of whom two survive her. It is alleged that for the past fifteen months she had hardly slept at all, notwithstanding which she had maintained good health and continued to discharge her domestic duties until partly paralyzed by a cerebral hemorrhage last spring.

Consumptives' Hospital Out-Patient Building. — In a recent letter to the mayor, Mr. Edward F. McSweeney, chairman of the board of trustees of the Boston Consumptives' Hospital Department, urges the erection of a new out-patient building for the hospital. During the past year about 3,000 cases have been referred to the present out-patient building on Burroughs Place, over 10,000 visits have been made there by patients, and 8,000 homes have been visited by the district nurses doing the work of the department.

Duties of the People to the Board of Health. — Under the auspices of the Boston Hygiene and Sanitation Society, there was held one evening last week at the North Bennet Street Industrial School a meeting of residents of the North End. An address was made by Mr. John Ritchie, Jr., on familiar subjects of hygiene, with special emphasis on the duties of the people to help themselves in such matters and to assist the efforts of the Board of Health in their behalf.

Growth of Free Hospital for Women. — The annual meeting of the Brookline Free Hospital for Women was held in Brookline, Mass., last week. The report of the visiting surgeon showed that during the past year the average number of occupied beds in the institution has been increased from 30 to 36, and that 123 more patients have been admitted and treated than during the preceding year. In view of the large waiting list of patients, whom even this increase could not accommodate, the trustees then voted still further to enlarge the number of beds to 40.

Inspection of Factories, Workshops and Public Health. — At hearings held last week at the State House before the special commission appointed "to investigate the efficiency of Massachusetts laws relative to the inspection of factories, workshops and public health," complaint was made by several medical inspectors that many of their duties required special mechanical knowledge which they could not be expected to possess, and that these duties take time from others more legitimately within their province. It seems likely that present methods of inspection may be radically changed in the near future.

Demonstration of Radio-active Preparations. — The annual meeting of the stockholders of the Institution for Physical Therapeutics will be held in Boston on Nov. 7. This meeting "will be followed by a demonstration of radio-active preparations, including the radiogen-schlamm for the local treatment of articular and muscular rheumatism." The preparations to be shown have been imported from the Radiogen Gesellschaft in Charlottenburg, Germany. The demonstration should be of particular interest in view of the recent special meeting of the Suffolk District Medical Society on the subject of radio-activity and its therapeutic applications.

The Horns of the Doctor's Dilemma. — At a meeting last week of the Channing Club in Boston, Dr. Richard C. Cabot gave an address on "The Doctor's Dilemma," in which he depicted the passing of the general practitioner, the family physician, crowded out on the one hand by specialists, on the other by the development of large public hospitals with their provisions for caring promptly and efficiently for the sick. Perhaps the public is pecuniarily, if not morally, the gainer by this process of hospitalization. The doctor to whom the dilemma is presented, however, might contemplate it with more equanimity if the extinction with which he is threatened really represented the achievement of the ideal of our profession,—to learn how men should live so that there might be no more sickness.

Massachusetts State Conference of Charities. — The eighth annual meeting of the Massachusetts State Conference of Charities was held on Oct. 26, 27 and 28 at Fitchburg, Mass. One of the principal topics under discussion was the care of the insane and the treatment of mental diseases. Dr. Owen Copp, of the Massachusetts State Board of Insanity, reviewed the history and prospects of the subject in a paper on "Mental Disease in Retrospect and Outlook in Massachusetts." Dr. Elmer E. Southard described "The Purposes of the New State Psychopathic Hospital at Boston," the project for whose establishment is still before the legislature. Mr. Edmund A. Whitman, of Cambridge, presented a paper on "Industrial Activities for the State's Dependents."

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At the closing session of the conference Dr. H. Lincoln Chase, of the Brookline Board of Health, spoke on "Co-operation in the Community for the Public Health."

ABATEMENT OF POLIOMYELITIS. — At the quarterly meeting of the Massachusetts Boards of Health, held in Boston last week, a paper was read by Dr. Robert W. Lovett on poliomyelitis, and there was considerable discussion of the epidemics of the disease that have prevailed during the past summer. At present the spread of the infection seems to be abated by the advent of cooler weather. During the past week there has been one death from it at Malden, Mass., and in Rhode Island only one new case has been reported. There has now been reported a total of 205 cases in Rhode Island, with 23 deaths. Of these, 79 cases and 12 deaths have occurred in Providence; 19 cases and 3 deaths in Newport; 12 cases and and 1 death in Woonsocket; and in Pawtucket, 12 cases but no deaths. It is expected that the epidemics are practically at an end for the present season.

NEW YORK.

ADVISORY BOARD OF STATISTICIANS, CITY HEALTH DEPARTMENT. — The first formal conference of the Advisory Board of Statisticians of the City Health Department was held on Oct. 28, when plans for work to be carried out next year were discussed. This board was appointed by Commissioner Lederle in July last, and its members are to serve without compensation. On it are Dr. Roger S. Tracy, former registrar of the Health Department; Dr. William H. Guilfoy, the present registrar; Dr. Cressy L. Wilber, chief of the Statistical Bureau of Commerce and Labor, Washington; Prof. C.-E. A. Winslow, of the College of the City of New York, formerly of the Massachusetts Institute of Technology; and Prof. Walter F. Wilcox, of the Department of Economics, Cornell University, the consulting statistician of the New York State Department of Health.

THE DROUGHT AND WATER SUPPLY. — The President of the State Board of Water Supply, accompanied by the consulting engineer of the board, has been making a tour through Westchester County in connection with the water supply problem occasioned by the long-continued drought, and they found the condition at Yonkers serious, the reservoirs containing but little more water than previous to the recent rainfalls. On Oct. 27 a conference was held by the Public Safety Commissioner, the local health officer and the city chemist regarding the condition of the water in the reservoirs, and the residents were urged to continue to boil the water before using.

THE STRAUSS MILK DEPOTS. — As the result of a conference with the committee appointed at the meeting of philanthropic agencies on Sept. 7, Nathan Strauss has now consented to keep open his eight all-the-year-round milk depots. In the interview with Mr. Strauss which the committee had at the residence of Dr. A. Jacobi on Oct. 24 at which he announced his consent to carry on the work, Mr. Strauss expressed the hope that as a result of the activity of this committee and others many additional infants' milk depots would soon be established, and also that ultimately the city would undertake this work to as large an extent as might be required.

TYPHOID FEVER. — One of the first acts of the new Governor, Horace White, succeeding Governor Hughes, has been to request the Health Commissioner, in view of the prevalence of typhoid fever throughout the state, to keep in close touch with the situation and take every precaution to prevent the spread of the disease. While no epidemic of large proportions has been reported, so many cases have developed that the governor is convinced that the present situation warrants the utmost vigilance on the part of the State Health Department. At the same time in New York, Edward Hatch, Jr., chairman of the State Water Pollution Commission, has called the attention of the public to the danger of typhoid after a protracted drought, when the first heavy rains are apt to wash down the filth which has accumulated upon the watersheds. In this connection he suggests that boiled Croton water is preferable to a bottled water whose proprietors in this dry season may be obliged to fill their orders from a source other than the spring.

FEWER DEATHS FROM TYPHOID FEVER. — Dr. John S. Billings, Jr., of the Health Department, has made a special report to Commissioner Lederle in which he states that the figures show that in the first nine months of the present year there have been fewer cases of typhoid fever and deaths from the disease in Manhattan than during the corresponding period in any of the last five years. The death-rate from typhoid for the three quarters of 1910 is 13.6 per thousand, as compared with 15.1 for the years from 1905 to 1909 inclusive. The greatest prevalence of the disease was in the year 1907, when 2,387 cases were reported,

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with 372 deaths. The present year there were 1,268 cases, with 172 deaths. "These figures," continues the report, "bear out the statement that there is no unusual increase in the prevalence of typhoid fever. The disease is more prevalent through New York state, Connecticut and Rhode Island, but not to any alarming extent." In New York City in the week ending Oct. 8 there were 17 deaths from typhoid, as against 24 in the corresponding week of 1909, and in the week ending Oct. 15, 20 deaths, as against 13 in the corresponding week of 1909.

Mortality from Typhoid Declining. — The State Commissioner of Health has submitted to Governor White a report on typhoid fever in the state during the past ten years, in which he gives the following figures:

| Month. | Average number of deaths, 1900 to 1909 inclusive. | 1910. |
|---|---|---|
| January, | 126.6 | 87 |
| February, | 107.1 | 87 |
| March, | 108.2 | 92 |
| April, | 94.4 | 68 |
| May, | 92.0 | 63 |
| June, | 74.4 | 70 |
| July, | 106.2 | 94 |
| August, | 153.9 | 131 |
| September, | 192.6 | 183 |

"From these statistics," the commissioner says, "it is evident that the normal variation of typhoid fever during the year is quite marked. The mortality from typhoid fever for the state during 1910 is appreciably below the average for the last ten years, and for the past three months for which statistics are available, namely, July, August and September, is approximately 10% less than normal. In the cities of the state, typhoid fever has during the past three months been in excess of the average only in three districts, the Adirondack and Northern, the Eastern Central and the Southern Tier districts. It was found, further, that of these districts only in the case of the Eastern Central District was typhoid fever appreciably in excess." He adds that Yonkers and Niagara also have an unusual number of cases of the disease, and that the conditions at Yonkers have recently been investigated by the State Department of Health. He then goes on to say: "It is not generally understood that typhoid fever is considerably more prevalent in the late summer and fall months of the year; consequently, as the fall approaches, public anxiety is unnecessarily aroused, and often gross exaggerations are prevalent as to serious epidemics, which are attributed to remote if not entirely erroneous causes."

The City's Budget. — The tentative budget for the city's expenses, which is usually accepted as final, has been agreed upon by the budget committee of the Board of Estimate and Apportionment. The total is $171,505,787, or more than $8,000,000 more than the expenditures in 1910. In 1911 the Department of Public Charities is to receive $2,838,446, an increase of $155,834; charitable institutions to which the city gives more or less support, $4,598,575, a decrease of $135,077; the Tenement House Department, $811,412, an increase of $21,690; Bellevue and Allied Hospitals, $1,196,065, an increase of $54,005; the Board of Ambulance Service, $27,950; the Department of Health, $2,823,499, an increase of $75,776. The original estimate of the Health Department was $1,253,198 greater than the amount allowed.

The State Water Supply Commission has approved the deep-rock pressure tunnel for the distribution of the supply from the new Catskill Aqueduct, stating that the plans for its construction of the City Board of Water Supply, which is building the aqueduct, are justified by public necessity. The Board of Estimate and Apportionment had already approved the tunnel, which will pass under the Borough of the Bronx, the Harlem River, Manhattan Island and East River, with mains leading through Brooklyn to Queens and under the Narrows to Richmond (Staten Island). The estimated cost of the work is $25,000,000.

## Current Literature.

Medical Record.

Oct. 22, 1910.

1. Fuller, E. *Post-Prostatic Cystotomy.*
2. Wagner, C. G. *Manic-Depressive Insanity and Dementia Precox.*
3. Northrup, W. P. *Postscarlatinal Anuria for Five Days in a Boy of Three and a Half Years; Recovery.*
4. Cumston, C. G. *Remarks on the History of Forensic Medicine from the Renaissance to the Nineteenth Century.*
5. Bailey, P. *The Hospital Treatment of Nervous Diseases.*
6. Sauer, J. G. *Constipation and Toxemia.*
7. Wiener, A. *Abscess in the Frontal Lobe of the Brain after Chronic Frontal Sinusitis; Erysipelas in Conjunction with Acute Mastoiditis.*
8. Clurman, M. J. *The Lodge Practice Evil of the Lower East Side.*
9. Greeley, H. *The King's Evil.*
10. *Fox, C. D. *A Case of Tetanus Successfully Treated with Magnesium Sulphate.*
11. Amberg, E. *Guide for the Lateral Sinus Line.*

10. Fox reports a case of tetanus in a boy of twelve. The period of incubation was eleven days, at the end of which time stiffness of the jaw appeared. The next day tetanic convulsions developed. The following day the wound was cauterized, — 3,000 units of antitetanic serum

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were given subcutaneously and 1,200 into the spinal canal. After this, 3,000 units were given every six hours, first subcutaneously, later intravenously. Increasing doses of bromide and chloral were given every four hours and morphia, gr. ¼, by mouth every evening. Four days after symptoms first appeared it was decided, as the patient continued to grow worse, to use magnesium sulphate intraspinally. Two cubic centimeters of the cerebrospinal fluid were withdrawn by lumbar puncture and an equal amount of a 25% solution of this salt was injected. Four hours after this injection, all four extremities had become very much relaxed, and from this time on the patient steadily improved. In all, he received 60,000 units of tetanus antitoxin — 24,000 intravenously, 12,000 intraspinally and the rest subcutaneously. [L. D. C.]

NEW YORK MEDICAL JOURNAL.

OCT. 15, 1910.

1. WRIGHT, J. *The Mechanicobiological Standpoint in Medical Problems.*
2. STEVENS, G. T. *A Series of Studies of Nervous Affections in Relation to the Adjustment of the Eyes.*
3. VAUGHAN, J. W. *The Comparative Value of Different Methods of Cancer Treatment.*
4. *KOPETZKY, S. J. *Results of Autogenous Vaccine Therapy in Acute and Chronic Middle-Ear Suppurations.*
5. BURKE, C. B. *Carbolic Acid Poisoning.*
6. BASS, C. C., AND GAGE, J. M. *Report of Fifteen Cases of Hymenolepis Nana.*
7. AUSTIN, H. W. *The Intimate Relation which Hospitals Bear to Public Health.*
8. CROSS, E. S. *Hypopituitarism.*
9. ASTLE, C. J. *A Case of Hyperchlorhydria Apparently Relieved by the Use of Prisms.*

4. Kopetzky reports fifteen cases of purulent otitis media treated with autogenous vaccines. He concludes that such vaccines are valuable in cases where subsidence of bacterial activity means the end of the lesion. In acute cases, after the period of violent onset with constitutional symptoms has passed, the added immunity acquired through vaccine therapy seems rapidly to cure the diseased ear. In cases with bone lesions the vaccines had no effect. [L. D. C.]

OCT. 22, 1910.

1. PARKER, G. M. *The Discard Heap — Neurasthenia.*
2. ROSENBERGER, R. C., AND STERN, S. *Bacteriological Studies in Cases of General Paresis.*
3. GLUECK, B. *Atypical General Paralysis of the Insane.*
4. PAUL, G. P. *Paratyphoid Fever.*
5. KNOTT, J. *Digitalis Fuchsii (Foxglove v. Foxes-Glew); "Opium of the Heart"; "Quinquina du Coeur."*
6. *BREM, W. *Hexamethylenamine in the Treatment of a Case of Meningococcus Meningitis.*
7. LYON, M. *What is a Rational Diet?*
8. ENGEL, H. *The Waters of Bad Nauheim and Their Therapeutic Effect.*
9. FRIED, H. *An Easy Method of Determining the Dose for Infants below One Year.*

6. Brem discusses the use of urotropin in meningeal inflammation, and reports a case of meningococcus meningitis in which he used it. The excretion of urotropin in the cerebrospinal fluid has been established experimentally by Crowe. This drug should, therefore, be used promptly in all cases in which meningitis is a possible complication. When meningitis is already present it is indicated as an adjunct to the treatment or as a substitute for Flexner's serum when the latter cannot be obtained. [L. D. C.]

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

OCT. 22, 1910.

1. *HERRICK, J. B. *Certain Popular but Erroneous Notions concerning Angina Pectoris.*
2. *CONNER, L. A. *Visceral Anesthesias of Tabes Dorsalis in Relation to the Diagnosis of Acute Inflammatory Conditions of the Abdomen.*
3. *TINKER, M. B. *Teaching the Principles of Surgery.*
4. PRIMROSE, A. *Compression of the Spinal Cord Causing Paraplegia and Its Surgical Treatment.*
5. GRANT, W. W. *Traumatic Facial Paralysis. Anastomosis of Facial Nerve to Spinal Accessory.*
6. WHALEN, C. *Intestinal Obstruction Due to Ascaris Lumbricoides, with Necropsy.*
7. TRACY, S. E. *A Simple and Efficient Means of Applying Artificial Heat.*
8. HIRSCH, I. S. *A Case of Foreign Body Calculus.*
9. PURCELL, C. E. *Submucous Resection of the Nasal Septum.*
10. EMERSON, F. P. *Results of the Operation of Submucous Resection of the Septum in Private Practice.*
11. WITHERSPOON, T. C. *Surgery of Cystic Degeneration of the Kidney.*
12. CHAPIN, H. D. *The Nutrition of the Feeble Infant.*
13. OCHSNER, E. H. *The Prognosis in Congenital Dislocation of the Hip.*
14. SCHILLER, H., AND O'DONNELL, P. S. *Radio-Activity Induced by the X-Ray.*
15. DAVIS, G. R. *Bites from Copperhead Snakes.*

1. Herrick claims that with true organic cardiovascular angina pectoris there cannot always be made out peripheral arteriosclerosis, cardiac hypertrophy and high blood pressure. The finding of aneurysm or lesion of the aortic valve does not exclude angina, but rather argues in its favor. Attacks are not always few in number and brief in duration; they do not occur solely after exertion. While the prognosis is grave, life is not necessarily limited to a few months. The disease is not to be excluded because the symptoms occur in women, even in nervous hysterical women. The pain is not necessarily severe; it may be mild or even lacking. Digitalis is not necessarily contra-indicated; it is often of great value.

2. Conner emphasizes the very important facts that in locomotor ataxia a loss of the normal sensibility of the viscera sometimes occurs, and in such cases acute inflammatory diseases of the abdomen, such as appendicitis or peritonitis, may develop and run their course without at any time presenting any of the three symptoms of pain, tenderness and muscular rigidity. He illustrates this very forcibly by an excellent case report.

3. Tinker advances some excellent practical ideas in regard to surgery teaching. He advocates teaching antisepsis and arrest of hemorrhage practically in the laboratory and operating room, as well as didactically in the class room. Anesthesia also should be taught in this way. Practical and laboratory tests or examinations should be given when possible instead of written and oral examinations. Current literature can be used in some cases instead of exclusive textbook instruction. Surgical diagnosis should be given more attention than major operative surgery. [E. H. R.]

BULLETIN OF THE JOHNS HOPKINS HOSPITAL.

SEPTEMBER, 1910.

1. *MINOR, C. L. *The Use of the X-Ray in the Diagnosis of Pulmonary Tuberculosis.*
2. LONGCOPE, W. T., AND MCCLINTOCK, A. T. *The Effect of Diminished Blood Supply to the Intestines upon the General Circulation.*
3. MANWARING, W. H. *The Physiological Mechanism of Anaphylactic Shock. A Preliminary Communication. A Summary.*
4. MANWARING, W. H. *Concerning "Cobra-Lecithid." A Summary.*
5. HEWITT, J. H. *A Peculiar Degeneration Found in Heart Muscle Cells. A Preliminary Report.*
6. *MEADER, F. M. *The Bacterial Power of the Blood Serum of a Typhoid Carrier, Before and During a Course of Active Immunization with Typhoid Vaccines. Patient Ceases to be a Carrier.*
7. HIGGINS, W. H. *The Association of Psoriasis with Jaundice.*
8. HIGGINS, W. H. *Pemphigoid Eruptions in Typhoid Fever.*
9. GROVE, W. G. *Acromegaly and Goiter. Report of a Case.*

1. Minor presents an interesting and fair discussion of the use of the x-ray in the diagnosis of pulmonary tuberculosis. He does not advise any physician to provide himself with such an apparatus unless he is willing to study it, become absolutely familiar with it and use it in every

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case. He advises fluoroscopy rather than radiography. In early diagnosis this method must always be subservient to older methods of percussion, auscultation, etc. It is of great value, however, in giving exact information as to the location and extent of any given lesion. He discusses what it shows in moderately advanced and advanced cases, as well as in bronchial glands.

6. Meader concludes from his study of the bactericidal power of the blood serum of a typhoid carrier before and during a course of vaccines that (1) the bactericidal power of the blood serum of a typhoid carrier may be that of a normal person. (2) A carrier may be actively immunized to B. typhosus by the use of autogenous vaccines, and in so doing the bactericidal substances in the blood may be markedly increased. (3) A carrier, if vaccinated so as to bring about an increase of bactericidal substances, may cease to harbor bacilli. (4) The best therapeutic dose seems to be 75 to 400 million. The carrier on which he based this study ceased to harbor bacilli after vaccination. [J. B. H.]

THE LANCET.

SEPT. 24, 1910.

1. *LATHAM, P. W. *The Etiology and Treatment of Rheumatoid Arthritis.*
2. TAKAKI, Y. *Clinical Surgery in Japan.*
3. HELLIER, J. B. *On the Condition Called "Falling of the Womb," with Special Reference to the Operative Treatment of the More Severe Cases.*
4. WOOD, C. G. R., AND WALLIS, G. F. C. *A Case of Bilateral Papilledema and Ring Scotoma due to Sphenoidal Sinusitis.*
5. SHAW, E. H. *The Immediate Microscopic Diagnosis of Tumors at the Time of Operation.*
6. MCKECHNIE, W. E. *Pneumonia: An Inquiry into Some of the Mechanical Conditions which may occur in the Chest in Adults Suffering from an Infection with the Pneumococcus of Fraenkel, and Observations on Treatment, with Special Reference to the Use of Morphine; and on Some Surgical Conditions.*
7. O'CONOR, J. *The Radical Cure of Hemorrhoids. Modified Whitehead's Operation.*
8. ROLLESTON, J. D. *Malignant Diphtheria with Multiple Lesions in an Infant.*
9. GARSON, J. G. *A Visit to Professor Treupel's Clinic: The Use of "606."*
10. MCKENZIE, D. *The Wandering Womb and Fumigation; a Chapter in Primitive Gynecology.*
11. HIRSCH, C. T. W. *Motoring Notes.*

1. Latham's treatment of rheumatoid arthritis is based on relieving irritation in the spine by means of blistering and cupping along the spine. [J. B. H.]

BRITISH MEDICAL JOURNAL.

SEPT. 24, 1910.

1. BARR, J. *The Use and Abuse of the Lime Salts in Health and Disease.*
2. *ROGERS, L. *A Simple Curative Treatment of Cholera.*
3. BASIL, M. M. *Notes on Cholera.*

THE BRITISH MEDICAL ASSOCIATION.

*Section on Dermatology.*

4. ABRAHAM, P. *Introductory Remarks.*
5. FEIBES, E. J., *et al.* *Discussion on the Diagnosis and Treatment of Syphilis.*
6. TOMKINSON, J. G. *A Case of Pityriasis Rubra Pilaris, with Remarks on the Etiology of this Condition.*
7. MCDONAGH, J. E. R. *Serum Diagnosis of Syphilis.*
8. BULKLEY, L. D. *On the Value of a Rice Diet in Certain Acute Diseases of the Skin.*
9. DALLY, J. F. H. *Recent Experiences in the Treatment of Favus.*
10. ABRAHAM, P. S. *Note on Some Varieties of "Molluscum Contagiosum."*
11. WILD, R. B. *Some Cases of Actinomycosis, with Especial Reference to Treatment by Potassium Iodide.*
12. EVANS, W. *Some Points in Connection with Electrolysis for Hirsutics.*
13. PERNET, G. *A Case of Pemphigus Vegetans.*
14. WALSH, D. *Investigation of a Dermatitis amongst Flower-Pickers in the Scilly Islands, the So-called "Lily Rash."*
15. HUTCHINSON, J. *Notes on Paleogenesis.*
16. BUNCH, J. L. *The Treatment of Some Skin Diseases by Vaccine Therapy.*
17. *DAWSON, G. W. *Cutaneous Diphtheria.*
18. MORTON, E. R. *The Use of Solid Carbon Dioxide in Dermatology.*
19. EDDOWES, A. *The Treatment of X-Ray Burns.*

*Section of Tropical Medicine.*

20. SANDWITH, F. M. *Introductory Remarks.*
21. BRUCE, D., *et al.* *Discussion on Human Trypanosomiasis.*
22. ROBERTS, J. R. *Some Features of Tuberculosis in India.*
23. ROW, R. *Further Observation on Leishmania Tropica of Oriental Sore of Cambay, India.*
24. CASTELLANI, A. *Observations on "Tropical Bronchoöidiosis.*
25. CHARLES, R. H., *et al.* *Discussion on Special Factors Influencing the Suitability of Europeans for Life in the Tropics.*
26. CONNAL, A. *A Report on the Serum Treatment of a Horse Suffering from Trypanosomiasis.*
27. CANTILE, J. *Lacto-Bacilline (Metchnikoff) in the Treatment of Tropical Intestinal Ailments.*
28. BIRT, C. *Phlebotomus or Sandfly Fever.*

2. Rogers describes a method of treating cholera by means of hypertonic saline injections given during the collapse stage, either subcutaneously or intravenously. Combined with this he gives various drugs to raise the blood pressure, usually digitalis, strophanthus, adrenalin, or pituitary extract. In addition to these methods of combating the toxemia he gives permanganates first in solution to drink in place of water, beginning with ½ to 1 gr. to the pint and increasing to 4 to 6 gr. to the pint. This he gives *ad libitum*. Calcium permanganate is the best for this purpose. Secondly, he gives potassium permanganate in a salol-coated 2-gr. pill every fifteen minutes for the first two hours, then every one-half hour for about twelve hours till the stools become green and less copious. By these methods the mortality was reduced from 59% to 34.7% by means of hypertonic salt solutions, and from 34.7% to 23.3% by means of permanganate during the last year.

17. Dawson reports some interesting cases of cutaneous diphtheria which occurs usually in children. It takes the form of an impetiginous eczema, nearly always on the head and face, and associated with a severe conjunctivitis after otorrhea and rhinitis. [J. B. H.]

DEUTSCHE MEDIZINISCHE WOCHENSCHRIFT. No. 39.

SEPT. 29, 1910.

1. SIPPEL, A. *Preliminary Communication on Dysmenorrhea.*
2. TREUPEL, G. *Further Experiences with Syphilitic and Parasyphilitic Disease with the Ehrlich-Hata Injections.*
3. *HERXHEIMER, G., AND REINKE, F. *The Influence of the Ehrlich-Hata Preparation on the Spirochetes of Congenital Syphilis.*
4. *WERNER, H. *The Ehrlich-Hata Preparation in Malaria.*
5. LOEWY, A., AND HIRSCHFELD, F. *Observations on the Minimum of Nourishment Needed.*
6. LOEWY, A. *The Constancy of Needed Nourishment in Healthy Men.*
7. CURSCHMANN, H. *A Few Indications and Contra-indications of Lumbar Puncture.*
8. ZWEIG, A. *Essay on the Clinical Aspects and Prophylaxis of Typhoid Fever.*
9. SCHUSTER, G. *In How Far is the Microscopic Examination with More Recent Staining Methods for Tubercle Bacilli Satisfactory for Diagnosing Tuberculosis of the Urinary Tract?*
10. TAKEDA, K. *The Urinary Pepsin as a Differential Point in Diagnosis between Carcinoma Ventriculi and Achylia Gastrica.*

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11. SELBACH. *A Case of Pancreatic Disease.*
12. FEY, J. *Pneumatosis of the Stomach Healed by Bloodless Stretching of the Cardia.*
13. RÖTHLER. *Rare Infections of the Newborn.*
14. CITRON, J., AND MUNK, F. *Cause of the Wassermann Reaction. (Reply to article in No. 38 on same subject.)*

3. These authors had the opportunity of studying two cases of congenital syphilis which had died two and four days after an injection of Ehrlich's new preparation. The tissue was stained by the Levaditi method, and a prolonged search was made throughout all the organs. In no organs were spirochete found except in the lungs, and here they showed marked signs of degeneration and agglutination. This was most marked in the case that received the smaller dose. The explanation of why they persisted in the lungs is not clear. They consider that these cases confirm the view that this compound is a specific poison for the spirochete.

4. From Werner's experiences with Ehrlich's new preparation it seems fair to conclude that it has a specific action upon the malarial parasite and that this is more marked against the tertian than the tropical form. He advises its use in all cases where the parasites resist quinine or the patient has an intolerance for quinine. [C. F., JR.]

BERLINER KLINISCHE WOCHENSCHRIFT. No. 40.

OCT. 3, 1910.

1. MEYER, E. *Disturbances in the Pupil in Dementia Precox.*
2. HOCHSINGER, K. *Nutrition Neuroses in Early Childhood and the Nervous Incapacity to Masticate in Childhood.*
3. *COHN, L. *The Importance of the Von Pirquet Skin Reaction in Childhood.*
4. HIRSCH. *Fatal Lead Poisoning of a Two-Year-Old Child Caused by Habitually Sucking the Painted Bedstead.*
5. STÜMPKE, G. *Is the Fever which appears after an Injection of Mercury in Syphilis to be Considered a Sign of Active Syphilis?*
6. FÜRBRINGER, P. *Injections of Metallic Mercury.*
7. SCHINDLER, C. *Concerning the Latest Methods in the Treatment of Gonorrhea and Active Immunization with Gonococcus Vaccine.*
8. AUFRECHT. *The Path of Infection in Tuberculosis of the Lungs; Its Clinical and Therapeutic Importance.* (Conclusion.)
9. SELLIE, J. *The Sensitiveness of an Organism to the Albuminous Substance Peculiar to Itself (Homastheria).*
10. STEINDORFF, K. *The Action of Atoxyl on the Eye.*

3. Cohn reaches the following conclusions in regard to the value of the Von Pirquet skin reaction. Its greatest worth is in the diagnosis and prognosis of tuberculosis in infants. A positive reaction in older children or grown persons he considers of no practical value, neither can a negative reaction absolutely rule out tuberculosis in the case of exhausted or emaciated patients. Positive diagnosis of infection with tuberculosis early in infancy demands a grave prognosis. Of 18 cases under one year of age, 16 died. [J. L. H.]

DEUTSCHES ARCHIV FÜR KLINISCHE MEDIZIN. BAND 100.

HEFT. 1–2. SEPT. 19, 1910.

1. *EDENS, E. *A Study of Pulse Tracings.*
2. *HANNES, B. *The Relation of Chromaffin Cells of the Suprarenals under the Influence of Experimental and Natural Diphtheria Infections.*
3. *HEDINGER, M. *The Value of Renal and Cardiac Medicines on Diseased Kidneys.*
4. SANDILOWSKY, I. *The Influence of Increased Temperature on Blood Concentration.*
5. FISCHLER, F. *The Occurrence of Acute Severe Liver Degeneration on Animals with Eck's Fistula with Complicating Pancreas Fat Necrosis, and also Some Remarks about the Relation between Liver and Pancreas.*
6. ROBINSON, G. C., AND DRAPER, G. *The Presphygmic Period of the Heart.*
7. *SCHMIDT, W. *The Functional Test of the Liver by Means of Levulose in Infectious Diseases, with Regard also to Urobilin Excretion.*
8. KANERT, J. *The Use of Synthetic Suprarenalin in Internal Medicine.*
9. BINGEL, A., AND CLAUS, R. *Further Investigation in the Blood-Pressure-Raising Substance of the Kidneys.*
10. JOLLES, A. *Method of Determining Iron in the Blood.*

1. Edens has reviewed the literature very carefully on the question of pulse tracings and gives a very good description of what points may be used in regard to diagnosing the pathologic condition of the heart from the tracings, and also what points may be brought out in regard to the heart function. A long list of references is included.

2. Hannes, from experimental work on guinea pigs with diphtheria toxin and the study of human cases of diphtheria, concludes that there is no relation between death in these cases and the chromaffin cells of the adrenals.

3. From experimental work Hedinger has learned that certain diuretics, such as digitalis, theophyllin, etc., act more effectively in the early stages of experimental nephritis caused by poisons which attack the tubules. In the later stages of these experimental nephritides they do not show an increased action. In any stage of the nephritis caused by drugs which affect the circulatory apparatus of the kidney they do not show an increased activity.

7. In infectious diseases and in the presence of toxins, the liver loses its tolerance for levulose and its content in glycogen. Simple increase of temperature, however, does not cause any diminution of the tolerance for levulose. Therefore these tests for disease of the liver are of no value in cases of acute infection with fever. These results are from a combined study of human cases and animal experiments. [C. F., JR.]

DIE THERAPIE DER GEGENWART.

JULY, 1910.

1. LAURITZEN, M. *The Treatment of Diabetes Mellitus in Children.*
2. JACOBSOHN, L. *Unconsciousness of Crisis-like Onset with Apnea in Tabes.*
3. STERNBERG, W. *Taste and Palatability in Hygiene and in Cooking.*
4. BRADT, G. *The Treatment of Whooping Cough.*
5. FRAENKEL, M. *The Importance of Roentgen Rays in Gynecology.*
6. **Berlin Medical Society, Session of June 22, 1910. Paul Ehrlich's Remedy for Syphilis.*

6. In April, 1910, Hata (Ehrlich's co-worker) made the first announcement of No. 606, dioxy-diamido-diarsenobenzol, a new preparation which had positively cured certain protozoan diseases in animals. Experimental syphilis in rabbits had been annihilated by it. Encouraged by these results, Ehrlich had given the remedy to Alt to try on paralytics and later to Schreiber to use on syphilitics. These clinical tests gave remarkably favorable results. In March, 1910, Ehrlich turned the remedy over to Wechselmann for tests on cases of lues in the Rudolph Virchow Hospital. Wechselmann now reports his first series of forty-eight cases. From the observations of these clinicians, which embrace some hundred cases, it is evident that in the doses used, "606" has no essential toxicity. In its curative effect it is far superior to anything hitherto used in fighting syphilis. All stages are affected. Whether the disease be hereditary or acquired, whether its manifestation be a chancre, a secondary roseola or a late visceral lesion, the effect of "606" is magical. The most wonderful thing about it is its action in cases which have obstinately resisted mercurials and other treatment. [L. D. C.]

AUGUST, 1910.

1. FRAENKEL, A. *Walled-off, Especially Interlobar, Pleural Exudate, with Remarks on Putrid Empyema.*
2. *TACHAU, H. *The Intravenous Injection of Antitoxin in Diphtheria.*
3. IMPENS, E. *Pharmacological Note on the Ester of p-*

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*Amino-Benzoic Acid, with Special Reference to Cycloform.*

4. Müller, G. *The Prophylaxis of Habitual Faulty Postures.*
5. Glaserfeld, B. *Remarks on the Treatment of Acute Gonorrheal Urethritis in the Male.*
6. Köhler, F. *Tuberculin Therapy.*

2. Tachau reports his experience and that of others with the intravenous use of antitoxin in diphtheria. This treatment has been tried out during the past ten years in Italy, France, England and more recently in Germany, where clinical observation has been corroborated by animal experimentation. The results have been the same everywhere. In ordinary cases there is more rapid disappearance of toxemia and less antitoxin is necessary than when given by the subcutaneous route. In very toxic cases and in cases with circulatory and renal complications it has no greater effect than when given subcutaneously. Untoward effects are more common. Chill, fever and collapse occur in many cases almost immediately after injection and pass off within a few hours. Collapse is alarming and demands vigorous stimulation; it is sometimes accompanied by a general erythema. Tachau sees in the intravenous use of antitoxin no essential therapeutic advantage over the subcutaneous method, and in consideration of its complex technic and its alarming untoward symptoms, he has discarded it. [L. D. C.]

September, 1910.

1. Dubois, P. *The Foundations of Psychotherapy.*
2. Geselschap, J. H. *The Treatment of Pleurisy with Effusion by Air Insufflation.*
3. Focke. *The Genesis of Spontaneous Epistaxis and Its Treatment with Digitalis.*
4. *Meidner. *Ehrlich's Remedy for Syphilis in Several Cases of Visceral Lues.*
5. Fischer, W. *The Ehrlich Treatment of Syphilis.*

4. Meidner has used Ehrlich's "606" on all cases of syphilis entering the Moabit State Hospital, Berlin, since May 1, 1910. The luetic manifestations have been varied — syphiloderms, perforating ulcers, rectal stricture, gummata, ocular palsies, cerebral and spinal lues, post-syphilitic headache, tabes and dementia paralytica. He concludes from this clinical experience that amido-arsenobenzol is a remarkable remedy for syphilis of the skin and mucous membranes. In visceral lues it has cured in single dose more often than mercury and iodide over a long period. Of especial importance is its prompt action in desperate cases. Cicatricial changes are not attacked and damage to nerve tissue is not made good. Tabetics and paretics are not susceptible to this drug, although some relief of ataxia and ocular palsies has been noted. "606" is superior to mercury and iodide in that the treatment is very short and the effect very prompt. Whether because of this advantage dioxy-diamido-diarsenobenzol will ever supplant these older specifics depends on whether it kills the spirochete for all time. This point can be determined only after years of observation. [L. D. C.]

Bullettino delle Scienze Mediche.

March, 1910.

1. Albertoni, P. *Traumatic Neurosis of Cardiovascular Type.*
2. Gurrieri, R. *Bilateral Oblique Inguinal Hernia and Hemoptysis following Trauma.*
3. Puntoni, V. *The Biologic Diagnosis of Echinococcus Cysts.* (To be continued.)
4. Bruno, A. *The Sphygmodynamometer of Prof. S. Salaghi.*
5. Nardi, A. *Strangulated Right Crural Hernia with Homologous Inguinal Hernia of Littré.*

April, 1910.

1. Rossi, F. *The Internal Respiration of the Tissues in Relation to Starvation and Acid Intoxication.*
2. Buccelli, G. C. *The Technic of X-Ray Applications.*
3. *Cantelli, O. *A Group of Substances Found in Certain Urines.*
4. *Calcaterra, W., and Dina, E. *Considerations on 508 Cases of Cutaneous Reactions to Tuberculin.*
5. Massi, W. *A Modification in the Sero-Precipitation of Vincent and Bellot.* (Preliminary note.)

3. Cantelli describes the chemical characteristics of a group of substances that he has succeeded in isolating from the urine of certain patients not showing the customary symptoms or signs of nephritis, and states his belief that there may be in the human organism chronic latent alterations, recognizable chemically in the urine alone by the presence of these oxyglycoproteid substances, which may, therefore, afford indication of a prenephritic stage.

4. From a statistical study of 508 cases reacting cutaneously to tuberculin, the authors consider the frequency of tuberculosis according to age and its relations with certain infections, notably diphtheria and typhoid. [R. M. G.]

Memoirs of the Oswaldo Cruz Institute. Vol. II.

Part I. April, 1910.

1. Hartmann, M. *A New Intestinal Ameba, Entameba Testudinis.*
2. Godoy, A. *A New Vaccine against Symptomatic Anthrax.*
3. de Faria, G. *Contribution towards the Classification of Brazilian Entozoa. II. Dicrocoelium Infidum, a Parasite of the Gall Bladder of Eunectes Murina.*
4. Moses, A. *Cases of Infection with Bacilli of Paratyphoid and Enteritis.*
5. Aragao, H. de B. *Investigations on Polytomella Agilis.*
6. Lutz, A. *Dipterologic Notes.*
7. Hartmann, M., and Chagas, C. *Studies on the Flagellata.*
8. Godoy, A. *Quantitative Study of the Germination of Spores.*
9. Neiva, A. *The Development of a Chinin-Resisting Race of Malarial Parasites.*
10. Foutes, A. *Some Observations on Tuberculous Infection and Its Virus.*

This first section of the second volume of memoirs, published every little while by the Oswaldo Cruz Institute at Rio de Janeiro, Brazil, presents the results of work, largely biologic research, done in the laboratories of the institute. It is printed in parallel columns of Portuguese and German, French or English. The illustrations are excellent. [R. M. G.]

## Obituary.

### GUSTAVUS LINCOLN SIMMONS, M.D.

Dr. Gustavus Lincoln Simmons died at Sacramento, Cal., Oct. 4, 1910, aged seventy-eight years six months. He was born in Hingham, Mass., in 1832, and was one of the pioneers in California, rounding the "Horn" in 1849. He returned to Boston and took up the study of medicine at Harvard, where he graduated in 1856, since which time he has been in active practice in Sacramento until within two months of his death.

At various times he has held the following positions: President California State Medical Society; county physician; surgeon National Guard of California; and for over twenty years was commissioner in lunacy. He was the first in California to successfully perform ovariotomy and the wiring of tendons.

Dr. Simmons exhibited in an enviable way in his life and work a happy combination of the virtues and merits generally regarded as characteristic of the Atlantic and Pacific coasts of our country.

He is survived by a widow and three children, a daughter and two sons: Dr. Gustavus C. Simmons, Harvard 1885, and Dr. Samuel Ewer Simmons, Harvard 1899.

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## RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, OCT. 22, 1910.

| CITIES. | Reported deaths in each. | Deaths under five years. | CITIES. | Reported deaths in each. | Deaths under five years. |
|---|---|---|---|---|---|
| New York | 1,191 | 366 | Waltham | 9 | 0 |
| Chicago | 565 | 158 | Pittsfield | 1 | — |
| Philadelphia | — | — | Brookline | 9 | 1 |
| St. Louis | — | — | Gloucester | 10 | 4 |
| Baltimore | — | — | North Adams | 5 | 1 |
| Cleveland | — | — | Northampton | 8 | 1 |
| Buffalo | — | — | Chicopee | 5 | 2 |
| Pittsburg | — | — | Medford | 4 | — |
| Cincinnati | — | — | Beverly | 5 | 1 |
| Milwaukee | — | — | Leominster | 4 | — |
| Washington | — | — | Hyde Park | 3 | 1 |
| Providence | — | — | Melrose | 2 | 1 |
| Boston | 197 | 66 | Newburyport | 4 | 2 |
| Worcester | 37 | 15 | Revere | 2 | — |
| Fall River | 28 | 14 | Westfield | 6 | 2 |
| Cambridge | 21 | 7 | Woburn | 7 | 1 |
| Lowell | 37 | 15 | Peabody | — | — |
| New Bedford | 31 | 11 | Marlboro | 3 | 0 |
| Lynn | 19 | 6 | Attleboro | 3 | 0 |
| Springfield | 20 | 2 | Adams | 2 | 1 |
| Lawrence | 23 | 5 | Clinton | 3 | — |
| Somerville | 21 | 4 | Gardner | 2 | 1 |
| Brockton | 20 | 7 | Milford | — | — |
| Holyoke | 19 | 9 | Watertown | 3 | 1 |
| Malden | 9 | 2 | Plymouth | — | — |
| Chelsea | 13 | 4 | Southbridge | 2 | 1 |
| Newton | 5 | 2 | Weymouth | — | — |
| Salem | 11 | 2 | Framingham | 6 | 0 |
| Haverhill | 10 | 4 | Wakefield | — | — |
| Fitchburg | — | — | Webster | — | — |
| Everett | 7 | 1 | Arlington | — | — |
| Quincy | — | — | Greenfield | 1 | 1 |
| Taunton | 11 | 4 | | | |

## LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND OTHER OFFICERS OF THE PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDED OCT. 19, 1910.

GASSAWAY, JAMES M., surgeon. Granted one month's leave of absence from Oct. 7, 1910, on account of sickness.

SPRAGUE, E. K., surgeon. Granted fifteen days' leave of absence from Oct. 28, 1910.

MATHEWSON, H. S., passed assistant surgeon. Granted one day's leave of absence, Oct. 12, 1910, under paragraph 189, Service Regulations.

GOLDBERGER, JOSEPH, passed assistant surgeon. Granted four days' leave of absence from Oct. 26, 1910.

MCLAUGHLIN, A. J., passed assistant surgeon. Directed to report at the Bureau upon special temporary duty. Oct. 17, 1910.

BOGGESS, J. S., passed assistant surgeon. Granted one month's leave of absence from Nov. 14, 1910.

RUCKER, W. C., passed assistant surgeon. Directed to proceed to New York, N. Y., upon special temporary duty. Oct. 12, 1910.

DE VALIN, HUGH, passed assistant surgeon. Granted thirty days' leave of absence from Nov. 2, 1910.

DUFFY, B. J., assistant surgeon. Relieved from duty at Buffalo, N. Y., and directed to proceed to Tompkinsville, N. Y., and report to the commanding officer of the Revenue Cutter "Seneca" for duty. Oct. 12, 1910.

JACKSON, JAMES M., Jr., acting assistant surgeon. Granted thirty days' leave of absence from Nov. 1, 1910.

TAPPAN, J. W., acting assistant surgeon. Leave of absence for twenty days from Oct. 1, 1910, amended to read twenty days from Oct. 5, 1910.

TERRY, M. C., acting assistant surgeon. Granted thirty days' leave of absence from Nov. 1, 1910.

BECK, J. E., pharmacist. Granted seven months' leave of absence without pay from Oct. 20, 1910.

### BOARD CONVENED.

Board of medical officers convened to meet at the Bureau Oct. 20, 1910, for the purpose of conducting a physical examination of an officer of the Revenue-Cutter Service. Detail for the board: Assistant Surgeon-General J. D. Long, chairman; Assistant Surgeon Paul Preble, recorder. Oct. 19, 1910.

## CHANGES IN THE MEDICAL CORPS U. S. NAVY DURING THE WEEK ENDING OCT. 29, 1910.

BROWNELL, C. D., surgeon. Detached from the "North Dakota" and ordered home to wait orders. Oct. 21.

PLEADWELL, F. L., surgeon. Detached from the bureau of medicine and surgery, Navy Department, and ordered to the "North Dakota." Oct. 21.

SHOOK, F. M., passed assistant surgeon. Granted sick leave for one month when discharged from treatment at the Naval Medical School Hospital, Washington, D. C. Oct. 24.

MCDOWELL, R. W., assistant surgeon. Granted sick leave for two months when discharged from treatment at the Naval Medical School Hospital, Washington, D. C. Oct. 24.

CATHER, D. C., passed assistant surgeon. Detached from the "Iowa" and ordered to the "Delaware." Oct. 25.

WHITMORE, G. B., assistant surgeon. Detached from the "Delaware" and ordered to the "Connecticut." Oct. 25.

MCDOWELL, R. W., assistant surgeon. Detached from the "Connecticut." Oct. 25.

BROWNELL, C. D., surgeon. Ordered to duty at the Naval Hospital, Las Animas, Colo. Oct. 26.

KELLEY, H. L., passed assistant surgeon. Commissioned passed assistant surgeon from June 6, 1910. Oct. 26.

LAWRENCE, H. F., passed assistant surgeon. Commissioned passed assistant surgeon from Sept. 21, 1910. Oct. 26.

## SOCIETY NOTICE.

NEW YORK STATE DEPARTMENT OF HEALTH. — The tenth annual conference of the sanitary officers of the state of New York will be be held in the Y. M. C. A. Auditorium, Buffalo, Wednesday, Thursday and Friday, Nov. 16, 17, 18, 1910.

## RECENT DEATHS.

DR. JOHN E. ALLEN, of New York, died from Bright's disease on Oct. 25. He was graduated from Bellevue Hospital Medical College in 1875, and for twenty-five years was connected with the New York City Department of Health.

DR. LENOX GRESHAM WALLING, who died of nephritis on Oct. 24, at Harrisville, R. I., was born there on June 19, 1881. He graduated from Brown University in 1902, and subsequently studied at Columbia Medical College. From 1906 to 1908 he served as house-officer at the Rhode Island General Hospital and at the Providence Lying-in Hospital. For the past two years he had been in practise at Providence.

DR. FREDERICK HOLME WIGGIN, of New York, died at Atlantic City, N. J., on Oct. 28. He was born at Kingston-on-Thames, England, in 1853. After being graduated from the Rensselaer Polytechnic Institute, Troy, and the University of the City of New York, he received the degree of M.D. from Bellevue Hospital Medical College in 1877. He served as interne at Bellevue Hospital and then practised at Litchfield, Conn., until 1890, when he removed to New York. Last year he retired from practise on account of ill-health. Among the honorary positions held by Dr. Wiggin are those of president of the New York County and State Medical Associations and president of the Alumni Society of Bellevue Hospital. During 1897 and 1898 he was adjunct visiting surgeon to Bellevue Hospital, and at the time of his retirement was gynecologist to St. Elizabeth's Hospital and consulting surgeon to the City, the Metropolitan Throat, and the Litchfield County hospitals.

## BOOKS AND PAMPHLETS RECEIVED.

The Occurrence of Infantile Paralysis in Massachusetts in 1908. By Robert W. Lovett, M.D., and Herbert C. Emerson, M.D. Reprint.

Infantile Paralysis in Massachusetts in 1909: I. The Occurrence of Infantile Paralysis in Massachusetts in 1909. By Robert W. Lovett, M.D. II. Infantile Paralysis as Observed in Health District No. 15 during 1909. By Lyman A. Jones, M.D. III. Methods of Treatment in Infantile Paralysis. By E. H. Bradford, M.D.; Robert W. Lovett, M.D.; E. G. Brackett, M.D.; Augustus Thorndike, M.D.; Robert Soutter, M.D.; Robert B. Osgood, M.D. IV. The Diagnosis of Infantile Paralysis in the Prodromal and Early Acute Stage, as Found in the Experimental Study of Acute Poliomyelitis in Monkeys. With Report of Findings in Four Human Cases. By William P. Lucas, M.D. Reprint.

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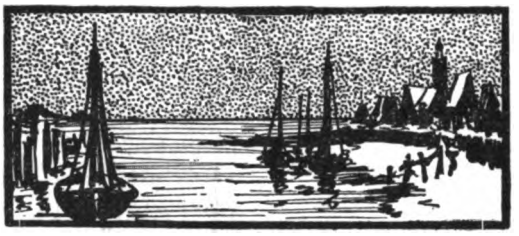

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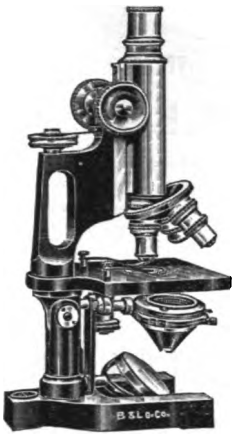

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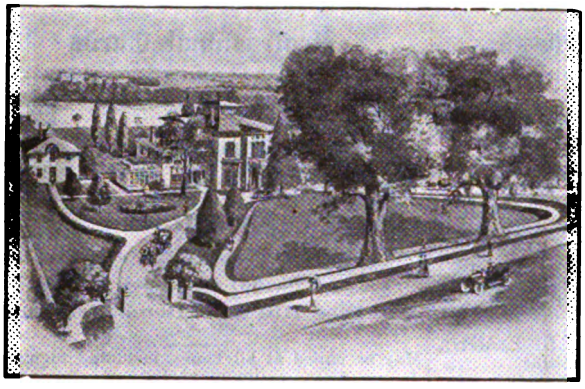

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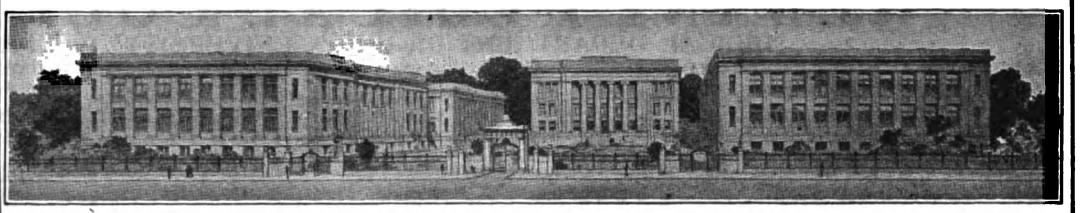

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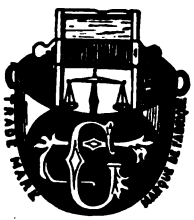

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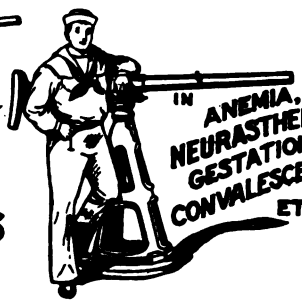


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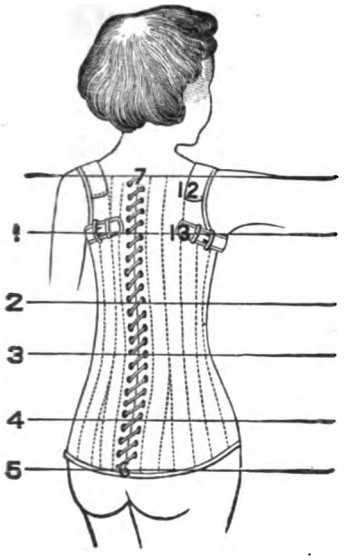


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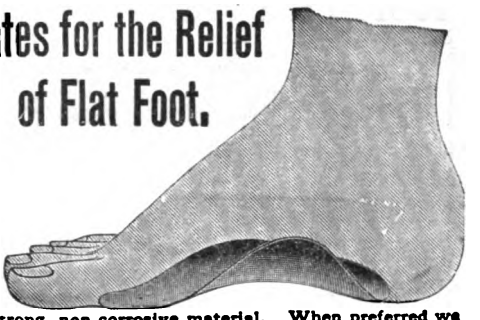

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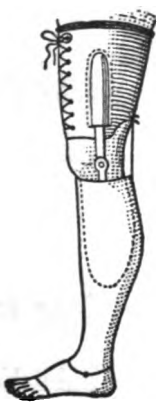

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# Original Articles.

## SPINAL ANESTHESIA.

BY FREEMAN ALLEN, M.D.,

*Consulting Anesthetist, Massachusetts General Hospital and to the Children's Hospital, Boston.*

THE early workers in spinal anesthesia, chief among whom were Bier, of Berlin, and Tuffier, of Paris, reported frequent untoward effects both during and after operation, and a considerable mortality. This was in the days when cocaine was used, and before the importance of adrenalin was recognized. Since 1899, when Bier's first work appeared, cocaine has gradually given way to the less toxic and equally efficient stovaine, novocain or tropacocaine, and is now never used. Also the importance of mixing adrenalin with any solution to be injected into the spinal canal has been recognized.

The result is that spinal anesthesia can no longer be considered dangerous, but is now relatively safe and has a distinct place in surgery.

On Nov. 9, 1909, at the Massachusetts General Hospital, we began a series of spinal anesthesia cases which now amounts to 117 cases. These combined with 34 cases done by the writer outside of the hospital make a series of 151 cases.

### INDICATIONS FOR SPINAL ANESTHESIA.

Alcoholism, old age, debility, certain cardiac cases, bronchitis, arteriosclerosis, extreme dread of general anesthesia, diabetes, urinary septicemia, shock, intestinal obstruction, renal insufficiency.

These are some of the conditions which singly or in combination have been our indications for doing spinal anesthesia. With very few exceptions there has been a clear indication in all of our cases.

In the course of the work, however, we have come to distinguish certain classes of cases in which spinal anesthesia works so well as to be the anesthetic of election whether a definite indication is present or not. These are simple herniotomy in men, prostatectomy, hemorrhoids, fistula in ano, amputations of leg or thigh, cystoscopy and urethral or bladder operations.

Of the 151 patients, only 14 were women. There were no children.

Of the 14 women, several asked to have spinal anesthesia on account of dread of ether. The same is true of the men, who in many instances were delighted with it and recommended it to their fellow patients.

Besides the above-mentioned operations, 3 cases of appendectomy were done.

In one railroad accident case both thighs were amputated under spinal anesthesia. It is highly probable that in this case general anesthesia would have been fatal. The patient survived and is now well.

The results of spinal anesthesia in prostatectomy are remarkably satisfactory.

### PREPARATION OF PATIENTS FOR SPINAL ANESTHESIA.

There need be no special change from the routine preparation of patients for general anesthesia. It is, however, important to feed and if necessary stimulate patients just before spinal anesthesia. They should at all events never be brought to operation starved. They should be given a light breakfast the morning of operation and an eggnog just before operation. The rectum must be emptied, as under spinal anesthesia the sphincter ani is completely paralyzed.

Rather large doses of morphine (gr. $\frac{1}{4}$) should be given twenty minutes or half an hour before spinal anesthesia, especially if the operation is to be a long one.

### TREATMENT OF PATIENTS DURING AND AFTER OPERATION.

The psychic element is of great importance in spinal anesthesia, and the patient's "morale" must be handled with care. The choice between general and spinal anesthesia should not be "put up to" the patient. The surgeons should decide whether or not the case is one for spinal anesthesia. If it is, the advantages of this method over general anesthesia should be explained to the patient.

Spinal anesthesia, although a routine in many European clinics, is still new in America. The result is that surgeons and attendants unfamiliar with the method are apt to make too much of it and unwittingly make their patients feel that something very extraordinary is going to be done. This is bad for the patient's courage.

When puncture is being done, as few people as possible should be present. After puncture has been done it is better not to question the patient at all as to his sensations or lack of them. If patients feel ill or are in pain they will always say so promptly. Persistent questioning as to whether a patient feels pain or not does no good and may easily make him imagine he does feel pain. Therefore, we test the anesthesia not verbally, but with a pin concealed from the patient, relying upon reflex movement for a guide. If the anesthesia seems satisfactory when tested by a pin-prick, the incision should be boldly made without telling the patient and without questioning him in any way. If left alone, a patient will often express surprise to hear that the operation is begun when it is more than half finished.

It is important to screen the field of operation from the patient. This may be done by a screen with which many operating tables are fitted, or by placing a towel over the patient's eyes. We have seen perfectly anesthetized patients lose their "nerve" entirely on catching sight of the wound.

It is a good plan to have a sympathetic nurse or attendant act as "mental anesthetist" by conversing with the patient during operation.

### SOLUTIONS USED.

Cocaine has now no place in spinal anesthesia. We use stovaine, novocaine or tropacocaine, always in combination with adrenalin. Freshly prepared solutions have not given satisfaction. The solutions used must not be subjected to the degree of heat necessary to sterilize them, as this spoils their efficiency. They also become in-

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efficient if exposed to alkalies. Therefore, the syringe must not be boiled in water containing soda, and the ampoules containing the solution must be made of alkali-free glass. Proprietary preparations give the best satisfaction. They come in hermetically sealed ampoules which must be filed open. We use:

(1) Stovaine-Billon (Poulenc Frères, Paris; Parmele Pharmacal Company, New York). This is dispensed in ampoules of 2 ccm. each. Each cubic centimeter contains adrenalin-borate, 0.00013; stovaine, 0.04; chloride of sodium, 0.0011.

The average dose of stovaine is 4 cgm. These ampoules contain 8 cgm. and are, therefore, double dosed, enabling us to give a minimum or maximum dose. We never use more than 6 cgm.

(2) Novocain, 5% solution (Meister Lucius Bruning, Hoechstadt am Main, Germany).

Ampoules of 3 ccm. containing novocain, 0.15; adrenalin borate, 0.000325; 5 drops of 1:1000 boric solution. Dose, 2–3 ccm. (10 or 15 cgm. novocain). Usual dose, 2.5 ccm.

(3) Tropacocaine as used by Bier. He uses at present only tropacocaine. Ampoules contain 1.3 ccm. of 5% solution tropacocaine, plus adrenalin hydrochloride 0.00013 per cubic centimeter. The dose of tropacocaine is thus 5 cgm.

In the series of 151 cases stovaine has been used 88 times; novocain, 36 times; tropacocaine, 27 times.

Stovaine gives a more intense and longer anesthesia with a smaller dose than the others, but must be used with great caution. Novocain requires a larger dose than stovaine to produce the same effects and is less toxic. Tropacocaine is the safest of the three and is used entirely by Bier, but it does not produce as lasting an anesthesia as the others.

*The duration of anesthesia* varies with the drug and its dose. It is usually from forty-five minutes to two and a half or three hours. A dose of tropacocaine (5 cgm.) often lasts only forty-five minutes, but may last an hour and a quarter. A dose of novocain (10 cgm.) will often last two hours and sometimes longer. A dose of stovaine (4 or 5 cgm.) will last two hours or more.

By increasing these doses an anesthesia of three hours can be obtained. No operation requiring so long a time as that should be done under spinal anesthesia, as the patient's nerves will not ordinarily stand it.

### INSTRUMENTS.

We use syringes and trochars made by Georg Haertel, of Breslau, and exactly similar to those used by Professor Bier. The syringes made especially for spinal anesthesia have not stood repeated boiling, so we have substituted the 5 or 10 ccm. German "Record" syringes. These have graduated glass barrels, metal pistons and metal points, and stand boiling well. Of course the piston must be out of the barrel when boiled owing to the uneven expansion of glass and metal. The trochars are made of nickel and, being pliable, cannot break off in the tissues or if struck against bone. They are 10 cm. long with a diameter of 0.8 mm. They have a short excavated bevel and are fitted with mandrins. The short bevel is necessary to insure the whole of the lumen being in the canal at the time of puncture.

In Germany, where many spinal punctures are made in succession, the syringe and trochars are left always ready in a thermochest so that when in use they are at about body temperature. The thermo-chest is not necessary when only one puncture is done at a time. The syringe should, however, be hot when used as this warms the solution to be injected, making it approximately body temperature and thus much better tolerated by the patient. A small file such as is provided by the makers of Stovaine-Billon should be boiled with the syringe and used to file open the ampoules of the solution.

### TECHNIC.

*Position.* — In very sick patients it may be necessary to make the puncture with the patient in the recumbent posture. It is objectionable, however, because it is more apt to result in unilateral anesthesia. If it must be done, the patient should lie square on his side with the knees drawn up, the forearms flattened on the chest, the head flexed and the whole back arched as much as possible.

It is much better, however, to have the patient *sitting* squarely on the table with his feet hanging over the side, the arms folded across the abdomen, the head flexed on the chest and the back bowed as much as possible toward the operator. The skin for a circle of six inches about the point of puncture should then be cleaned by shaving if necessary, soap and water, antiseptic alcohol, and ether.

The edge of a sterile towel should then be stretched across the spine in such a way as to connect the two highest points of the iliac crests. The towel's edge should then cross the body of the fourth lumbar vertebra, which can be palpated, and from this the first or second lumbar interspace located. Puncture may be made in any lumbar interspace, but generally the second or third is the best. The cord ends opposite the body of the second lumbar vertebra.

Having located the interspace, the skin over it should be marked by some blunt instrument or by the finger nail. The boiled syringe and trochar, together with the ampoule of anesthetic solution, must be at hand on a sterile table. The syringe is put together, the ampoule opened and the solution drawn into the syringe through the trochar and accurately measured. The mandrin is replaced in the trochar, which is then wiped dry with a sterile sponge.

An assistant then thoroughly freezes the skin over the marked space with ethyl chloride.

Puncture is made in the median line or a little to one side of it. The first step is to quickly pierce the skin and subcutaneous tissue, and then stop. Then the mandrin is withdrawn from the trochar, which is pushed carefully forward, possibly slightly upward, in the median line. As soon as

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the dura is pierced there will be a flow of spinal fluid from the trochar.

The fluid should flow either in a rapid succession of large drops or in a steady stream. If it does not flow in this manner, injection should not be made, but the trochar moved to and fro or cleared by reinserting the mandrin until a suitable flow of fluid is obtained. This is of the greatest importance, and neglect of it is one of the commonest causes of failure.

When a few drops have escaped from the trochar the syringe containing the solution is attached and the piston gently withdrawn until a suitable amount of spinal fluid has been allowed to mix with the anesthetic solution. The amount of fluid thus withdrawn varies from 2 to 10 ccm. Usually 4 or 5 ccm. suffice.

The mixed fluids are then gently injected, the syringe detached, the trochar withdrawn, the puncture covered with a sterile towel or dressing and the patient placed recumbent with the head well supported.

Professor Bier regulates the height of the anesthesia by the force of injection, amount of spinal fluid used to dilute the anesthetic and by the use of the Trendelenburg posture. If his technic is regidly adhered to and only tropacocaine used, this may produce good results; but the Trendelenburg posture has so often been followed by untoward symptoms during operation that we have given it up and rely more on the force of injection for obtaining a high anesthesia.

*Failures to produce anesthesia* are most often due to faulty technic or inefficient solutions; and less often to anatomical causes, such as obesity or osteo-arthritis of the spine.

In the series of 151 cases there have been 7 failures. Three of these were early cases and were due to inefficient solutions. These solutions were freshly prepared and spoiled by overheating.

In two cases probably due to osteo-arthritis of the spine the vertebral interspaces could not be palpated and puncture seemed impossible. These were, however, early cases and among the later cases several patients with osteo-arthritis of the spine were successfully punctured, although sometimes five or six attempts were necessary.

In one case obesity was so great that no vertebral interspaces could be palpated and after two attempts it was given up. This was also an early case and several cases of obesity have been successfully punctured since.

The following is an example of failure due to error in technic. In a middle-aged man puncture was made in the second lumbar interspace. Spinal fluid flowed in very slow drops, and moving the trochar produced no better flow. The operator being hurried, injection was made when only a few drops of spinal fluid had been withdrawn to dilute the anesthetic solution. The result was total failure. In such a case another puncture should be made in a different interspace.

### UNTOWARD EFFECTS DURING OPERATION.

The commonest untoward effects that occur during operation are nausea and vomiting, faintness, air-hunger, pallor, sweating and restlessness. These are all toxic symptoms and are due to too great an upward diffusion of the anesthetic drug in the spinal canal. The commonest cause of this is the use of the Trendelenburg posture or too forcible an injection in an effort to obtain a high anesthesia. Too large a dose will also cause them. They can easily be avoided by caution in these matters.

Nausea and vomiting occurred during operation in nine of our cases. It was always transient and subsided promptly with treatment. If taken in time these symptoms may be checked in some patients by giving a stiff drink of whiskey or brandy. If this fails the head and shoulders should be raised and a small dose of strychnine given hypodermically. Facial massage and lip-friction by the repeated application of hot towels acts very well.

After operation the patient should be placed in bed with the head and shoulders raised. Feeding and stimulation may be begun at once by mouth. Nothing given by rectum will be retained until the anesthesia has entirely passed away. Special precautions against hot-water bottle burns are necessary.

### AFTER-EFFECTS.

The commonest immediate after-effects of spinal anesthesia are headache, backache, stiff neck, sciatic pains, paralyses, ocular palsies. Our cases have been remarkably free from after-effects. Only two of our cases have had headache. In both cases it was very severe occipital and frontal headache and resisted treatment by ordinary headache remedies. In one case it lasted over twenty-four hours.

One patient, a doctor, complained of sciatic pain which he likened to "growing pains." This pain was very severe and required morphine to control it. It lasted eighteen hours.

There were a few cases of transient stiff neck.

### *Case.*

One case, the first done outside the hospital, was striking as illustrating effects during and after operation that may or may not be due to spinal anesthesia. The patient was a heavily built man of fifty-five years, with mitral disease, slight arteriosclerosis, very deaf. He gave a history of two previous attacks of numbness of the left arm and hand. The patient required operation for double inguinal hernia. He was given $\frac{1}{6}$ gr. of morphine twenty minutes before operation.

One and one-half cubic centimeters of Stovaine Billon (6 cgm. stovaine) diluted with 3 ccm. of spinal fluid was injected in the second lumbar interspace. The injection was fairly forcible and the patient placed in rather marked Trendelenburg for three minutes. The table was then placed level and the patient cleaned for operation. In about five minutes he complained of faintness and showed marked pallor, sweating, air-hunger, nausea, retching and vomiting. Brandy by mouth produced no improvement. The operation was

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begun and the anesthesia proved to be perfect. Soon after the beginning of the operation the patient lost consciousness and the respiration became Cheyne-Stokes in character. Massage of the face and lips with hot water produced slight improvement. The pulse improved after a hypodermic of strychnine. Patient remained unconscious throughout the operation and for two hours after being put to bed. On being put to bed distinct and complete left hemiplegia was observed. This cleared up in less than twenty-four hours, but left slight paralysis of the left wrist which persisted two days longer.

During the next twenty-four hours there developed complete paralysis of the right leg. This persisted for three weeks. It then gradually cleared up and in two months was entirely well.

In view of the patient's two previous attacks of apparent left hemiplegia it does not seem certain that this was altogether due to spinal anesthesia.

The above case was undoubtedly alarming, but the majority of the cases were strikingly favorable and convince the writer that spinal anesthesia has a distinct and useful place in surgery.

The writer wishes to thank the members of the Surgical Staff and the House Pupils of the Massachusetts General Hospital for encouragement and assistance.

## ETIOLOGY OF ELEPHANTIASIS.*

BY GEORGE CHEEVER SHATTUCK, M.D., BOSTON,

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HAVING recently become interested in sporadic elephantiasis through seeing a few cases, I undertook by a review of the literature to ascertain the present state of knowledge of this disease. Although much has been written about it, important questions of etiology remain obscure. Firstly, there are several types of elephantiasis, and several allied or similar conditions which merge with it in such a way as to render sharp distinctions impossible. Moreover, cases pathologically typical show striking differences in clinical history and in apparent etiology.

The term elephantiasis, as you know, formerly had a wide application. There was E. graecorum, now called leprosy, and E. arabum which included all other forms. Virchow regarded Madura-foot as a form of elephantiasis and was in doubt whether or not to include also fibroma molluscum. After this the application of the term became progressively narrower until a relation had been established between elephantiasis and filariasis. A tendency was then shown to regard the tropical cases as true elephantiasis and to speak of sporadic forms as pseudo (Brault) or false elephantiasis. This tendency met so much opposition from Hutchinson and others that sporadic and endemic cases are now included alike within the current meaning of the word.

There are several important varieties. One of the congenital forms involves the whole body. It occurs generally in acephalic monsters, and is due probably to congenital defect of the lymphatic system (Virchow). Elephantiasis lymphangiectodes and E. telangiectodes (Esmarch and Kuhlenkampff) resemble angiomata, are probably congenital and seem more closely related to tumors than to acquired elephantiasis. There is a similar cystic form (Virchow), a fibromatous form related to fibroma molluscum (Esmarch and Kuhlenkampff), and a neuromatous variety, but type cases of these have little in common with ordinary elephantiasis.

As this paper deals only with lymphatic elephantiasis, these forms need no further mention here.

Elephantiasis is again divided into groups corresponding roughly to etiology, — the congenital, the sporadic, and the endemic, — but until important questions of etiology have been settled, no classification on this basis can be satisfactory. The congenital cases present great variety. A few of them resemble so closely the common acquired forms as to suggest a similar etiology; but other cases are quite different, and so little is really known that I prefer to leave congenital elephantiasis out of this discussion.

Acquired cases of lymphatic elephantiasis are divided for descriptive purposes into elephantiasis of the legs, of the genitals, of the face and of the scalp. The older writers gave separate names to cases differing in external appearance or consistency. They distinguished thus, E. glabra, E. verrucosa, E. ulcerosa, E. mollis and E. dura. These distinctions do not correspond to essential differences.

Elephantiasis in the broader sense is not a distinct disease but a group of pathological conditions which leads to progressive enlargement of the part affected. How far this is true of acquired lymphatic elephantiasis is an important question. Undoubtedly, acquired elephantiasis is much the same in its clinical manifestations and in its pathology whether it appears endemically or sporadically.

The character common to typical cases of lymphatic elephantiasis is progressive enlargement. This enlargement is due to chronic edema, hyperplasia of connective tissue and dilatation of lymphatic vessels. The *central question* in the etiology of elephantiasis is as to the *relation between edema, hyperplasia* of connective tissue and *lymphatic dilatation.* To answer this question it is necessary to study independently the causes which may lead to each of these conditions.

Edema may be traceable to local or to distant causes of venous stasis; for example, to phlebitis; to chronic cardiac or renal disease; to disturbances of innervation, peripheral (Obersteiner and Redlich), or central (Edinger), as in polyneuritis or syringomyelia; to abnormal blood, as in anemia; to cachexia; or to inflammation. Experiments of Ranvier show that ligation of the femoral vein in a dog is not followed by edema unless the sympathetic fibers to the leg have been cut. Cutting the sympathetic causes arterial

* Read before the American Society of Tropical Medicine, June 11, 1910, St. Louis, Mo.

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dilatation and increase of local intravascular pressure. Cornil and Ranvier believed this to be the real cause of edema, excepting perhaps the edema of cachexia. They say that if tension is sufficient, edema will occur even without obstruction of veins. They attribute the edema of inflammation to the same cause. Guyot [1] suggested trophoneurosis and Cornil,[1] interstitial neuritis as possible causes for the edema of elephantiasis. P. zur Nieden [2] believed that edema in elephantiasis was due to mechanical obstruction of lymphatic circulation, resulting from inflammation, and Lallement [3] attributed it to atony of vessel walls.

Abundant clinical evidence shows that obstruction of lymphatics does not often produce manifest stasis of lymph, and Cohnheim's [4] experiments indicate that lymph stasis cannot produce *edema* if lymph formation is normal and if the veins are patent.

Therefore, the edema of elephantiasis is rarely if ever due to obstruction of lymphatics solely, but lymphatic changes may act as contributive causes of edema. It is important to recognize that venous thrombosis is commonly present in lymphatic elephantiasis, that proliferation of endothelium in the capillaries is one of the earliest changes (Winiwarter), and that this change favors obstruction. Edema in elephantiasis is influenced also by gravity. It begins generally in the legs and extends upward. In the earlier stages the edema is diminished by rest in bed and increased by walking.

Observation shows that chronic edema from almost any cause may form the basis for subsequent elephantiasis and that persistent edema is its first visible manifestation. In the majority of chronic edema, however, no elephantiasis follows. Kaposi says that edema with lymph-stasis is more likely to result in elephantiasis than is pure serous edema. From histological studies, Wernher concludes that the edema of elephantiasis begins in the skin.

We come now to the causes of varicosity and thickening of lymphatics, dilatation of lymph spaces and stasis of lymph. Virchow says that, in elephantiasis, obstruction and dilatation of lymph channels occurs early and that sometimes only the small, sometimes only the large, ones are affected. It has been observed earliest in the papillary layer of the skin (Winiwarter) and where the network of lymph capillaries is most extensive (Busey). When lymph channels are dilated, we may assume that there is some degree of lymphatic stasis, whether edema be present or absent, but experiments show that obstruction of large trunks, even ligation of the thoracic duct, does not always cause ectasis (Magendie, Dupuytren, Lesser [5]). Why changes in the walls of lymphatic vessels do not always follow retardation of lymph-circulation is explained by the rich anastomosis and the low pressure in the vessels. This is true especially of the smaller lymphatics (Fischer). Unna believes that lymph stasis can be produced only by hindrance to the escape of blood from the veins and that lymph stasis can under no circumstances produce extensive lymphangiectasis. He quotes various experiments to prove this. Moreover, ectasis occurs so frequently without obstruction of lymphatics that other explanations for it are needed. The following theories have been offered: that ectasis may result sometimes from proliferation (Langhans, Torock, Nasse [5]), that atony may cause it (Corre [6]), that congenital weakness or anomalies may predispose to it (Busey, Fischer), that gravity may be the chief factor (Wernher [7]), and that chronic heart disease with resulting venous and lymphatic stasis may produce it (Weigert [8]).

Busey shows in his monograph that the etiology of lymphangiectasis and of obstruction of lymphatics is multiple, and that to account for it in some cases, a congenital change or an inherited weakness must be assumed. Fischer says that, owing to the disagreement of pathologists, no satisfactory conclusions concerning it can be reached. He himself believes that proliferation of lymphatic vessels is an important factor, but he agrees with the majority that lymphatic varices may result when, in a limited area, most of the lymph vessels are obstructed, and he explains that, by overfilling, the elasticity of the vessels is impaired, and that insufficiency of valves may result either from dilatation or from destructive inflammation. He compares the production of lymphatic varices to that of venous varices. It is generally agreed that the filaria can produce varices in the lymphatics, but the way in which it does this is purely conjectural. Winiwarter believes that ectasis of small lymph-spaces is the *first* change in elephantiasis.

Briefly, we have reason to believe that stasis of lymph may sometimes be promoted if not actually caused by obstruction or destruction of lymphatic trunks or glands, by agents acting from within or from without, by proliferation of the smaller lymphatics, by changes in the walls of the lymphatic vessels due to inflammation, or by widespread destruction or thrombosis of small lymphatic vessels. These conditions may be either acquired or in part at least congenital.

Clinical observation teaches that lymph stasis, or a probable cause for such, is often a demonstrable antecedent to elephantiasis. If not a forerunner, it appears in the early stages of the disease. Busey is justified in the conclusion that *lymph stasis is a necessary factor in elephantiasis*, but that the *mode of its production is not essential.*

The third process which always accompanies elephantiasis is hyperplasia. Winiwarter says that it takes place in the endothelium of capillaries in tissue that appears normal near the margin of elephantiasis. A definite increase of vessels has been observed (Welt, Langhans, Rindfleisch [8]). In the early stage round-cell infiltration is found along the veins, but not around the lymph-vessels.

[1] Quoted by Guillet.
[2] Quoted by Hastings.
[3] Quoted by Hastings.
[4] Quoted by Jarisch.
[5] Quoted by Fischer.
[6] Quoted by Guillet.
[7] Quoted by Hastings.
[8] Quoted by Winiwarter.

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Dilatation of superficial lymph-capillaries and spaces is accompanied by proliferation of endothelium which leads gradually to obliteration of the deeper vessels. Capillaries, arteries and lymph vessels of the skin contain clumps of endothelial cells and coagulated fibrin, the nerve sheaths show increase of fibrous tissue, and inflammatory hyperplasia occurs in the glands (Cornil). Connective tissue hyperplasia is first apparent in the deeper layers of the skin. It penetrates thence into the subcutaneous tissue, especially along nerves and vessels, leads to atrophy of fat and muscle, and in extreme cases replaces them entirely. When the periosteum is attacked, the bones hypertrophy. In the earlier stages of elephantiasis all components of the skin except the elastic tissue may hypertrophy, but with further increase of connective tissue the other structures atrophy (Jarisch). Enormous increase of smooth muscle has been observed in the scrotum (Rindfleisch [9]), but the changes here are the same in general as those of elephantiasis of the legs. Virchow likens the cut surface in E. dura to bacon, says that it resembles a mass of scar tissue and that the essential change is progressive increase of connective tissue.

How can this proliferation be explained? Andral looked upon it as a "scirrhous degeneration." Virchow believed that an "irritative" condition exists from the first and that, in cases following venous obstruction, slight injury leads to inflammation. Wernher explained that chronic irritation results from decomposition of stagnant lymph, that this irritation leads to increased growth from the abundant building material, that "subinflammation," and finally inflammation, follows. Kaposi thought that stagnating lymphatic edema renewed by attacks of inflammation was the basis of connective tissue hypertrophy, and to lymphatic and inflammatory edema he attributed a high nutritive value. He could not explain why serous edema without inflammation is sometimes followed by elephantiasis. Inflammatory edema is characterized by a network of fibrin not seen in simple edema (Cornil and Ranvier). Busey and Jarisch accept the theory of increased nutrition through stasis, especially lymph stasis, and Kock [10] attributes hyperplasia to stasis combined with inflammation as in chronic suppuration, ulceration or eczema. It was pointed out by Winiwarter that elephantiasis is most apt to occur when repeated and long-standing arterial hyperemia has coexisted with impeded outflow of venous blood and of lymph. He attributed this hypertrophy to overnourishment, and considered stasis to be the most important predisposing factor. The stasis might be produced by any sort of mechanical obstruction or by chronic inflammatory hyperemia.[11]

These views were generally accepted until Bard [12] asserted that chronic edema *per se* could not cause a permanent increase of connective tissue. He attributed the sclerosis to inflammation, and advanced the theory that chronic thickening of cardiac valves, and sclerosis of the liver and kidneys, so often occurring with it, were all inflammatory and due to the same underlying cause; and that elephantiasis was a similar process.

After the advent of bacteriology Achalme [12] attempted to explain the supposed chronic inflammation by maintaining that the streptococcus could remain latent in the tissues and be responsible also for the attacks of acute inflammation. Guillet and others [13] tested this theory by attempting to cultivate bacteria from lymph withdrawn in the absence of demonstrable inflammation, and by searching for bacteria in sections of tissue from elephantiasis. Their results were uniformly negative. In the presence of acute inflammation the streptococcus has been isolated from a great many cases of elephantiasis, and Prout has asserted that elephantiasis, whether sporadic or endemic, is due to streptococcus infection. The majority of recent writers recognize that the streptococcus plays an important part in the etiology of many cases of *sporadic* elephantiasis; but they follow Manson in believing that the filaria is the principal factor in *tropical* elephantiasis. Dufougeré, who spent five years in the Antilles, believed at first that all elephantiasis was due to streptococcus lymphangitis. While there he saw many patients who had had repeated attacks of lymphangitis, but the majority of them did not develop elephantiasis. Nevertheless, every one of his 62 cases of elephantiasis affirmed that the trouble began with lymphangitis. Dufougeré isolated a peculiar diplococcus from 9 cases, and attributed elephantiasis to that rather than to the streptococcus. At about the same time Le Dantec [14] isolated a similar diplococcus, but he considered the presence of filaria necessary for the production of elephantiasis and explained the later disappearance of the filaria as due to inflammation produced by the diplococcus. Various other organisms have been cultivated in a few instances (Renon, Sabourand, Brault).

Less than a year ago Dubruel published some very important work on elephantiasis. His observations extended over five years, and for three years he was in Tahiti or neighboring islands. In this region elephantiasis is common, but other manifestations of filariasis, such as chyluria and varicose groin glands, are rare. Specimens of blood taken in the evening from 200 cases, about one eighth of the total population in the island of Moorea, were negative, although elephantiasis occurs there in about one twelfth of the population. No case of chyluria was seen, and no filaria was found by examination of centrifugalized lymph from cases of elephatiasis which had been operated on. The filaria was observed only in a single case which had been sent to the hospital with the diagnosis of typhoid fever.

Blood withdrawn in the absence of fever from outside the diseased area in cases of elephantiasis gave no growth on ordinary media, but at the

[9] Quoted by Luitheln.
[10] Quoted by Jarisch.
[11] Winiwarter.
[12] Quoted by Guillet.
[13] Bernhard and Blumenthal.
[14] Quoted by Dufougeré.

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height of an attack of lymphangitis, blood from any part of the body yielded staphylococci in pure culture. Fluid taken from old cases that had not had acute inflammation for years generally gave no growth. Fluid withdrawn in the presence of lymphangitis showed streptococci more frequently than that withdrawn between attacks. Sometimes the fluid showed also staphylococci, but they were not infrequently mixed with other organisms. Two kinds of bacilli and a diplococcus are mentioned.

Important evidence points to the possibility of contagion in elephantiasis.

Dubruel's conclusions are as follows: That it does not appear that the filaria plays the part in elephantiasis attributed to it by Manson; that tropical elephantiasis should be brought closer to elephantiasis nostras, a bacterial disease following repeated erysipelas, and that during acute attacks of lymphangitis patients should be regarded as infectious and should not be admitted into open surgical wards.

From regions where the filaria and its intermediate host abound, Manson presents evidence proving that the filaria is an important factor in the production of elephantiasis. That it can cause dilatation and varicosity of lymphatics is probable. That it can of itself produce inflammation or fever is not proven. Manson says that, by injuring the lymphatics, the filaria predisposes to bacterial infection and that to infection the lymphangitis and fever are due.

It is undeniable, at any rate, that inflammation of bacterial origin often precedes, and generally accompanies, the development of elephantiasis wherever found. Doubtless in many cases inflammation plays an essential part in causing hyperplasia of connective tissue. The view that hyperplasia in elephantiasis may sometimes result from chronic non-bacterial irritation, or from hypernutrition in the absence of inflammation, is questionable, but many cases in which bacterial inflammation was never manifest can be cited in its favor. To explain this group of cases, and those in which elephantiasis develops after a single inflammatory attack, congenital anomalies or weakness of lymphatics may be inferred. On the other hand, it has been suggested that the congenital cases which resemble acquired elephantiasis may be due ultimately to intra-uterine infection.

### SUMMARY.

1. The essential characteristics of typical acquired elephantiasis are lymphangiectasis, hyperplasia of connective tissue, and chronic edema.
2. The relation of these to each other in the production of elephantiasis is not clear.
3. It appears that these changes may frequently be attributed to the interaction of stasis and of inflammation.
4. Stasis always occurs early and persists.
5. Inflammation may precede or follow stasis, or may not be manifest at any stage of the disease.
6. Inflammation when present may be acute or chronic; and is generally traceable to bacterial infection.
7. Either chronic stasis or inflammation from any cause may predispose to elephantiasis, but even when they occur together, elephantiasis does not always result.
8. There is reason to suppose that congenital weakness or anomalies of lymphatics may play an essential part in the production of some cases of elephantiasis; and that such weakness or anomalies can be inherited.
9. The filaria is an important factor in the production of endemic elephantiasis of some regions, but it is not essential to the occurrence of endemic elephantiasis.
10. Elephantiasis in filarial regions results indirectly from filariasis through bacterial infection.
11. Sporadic lymphatic elephantiasis and endemic elephantiasis are not essentially different.

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## CONGENITAL OPHTHALMOPLEGIA EXTERNA.

BY S. G. WEBBER, M.D., BOSTON.

Congenital ophthalmoplegia is a rather rare condition. In the medical journals and reports of the last thirty years I have found records of only seventy-four cases. Most of these were in journals or memoirs devoted to affections of the eyes, only a few appearing in those dealing with diseases of the nervous system.

It is some years since I saw Mr. S. His birth had been difficult, instruments having been used.

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Since infancy there had been strabismus of the left eye; irregular movements of the head and left hand. There had been, at least at times, sugar in the urine. He was said to have a peculiar gait in walking, unsteady, with much motion of the body and head. No history of other peculiarities during his earlier life could be obtained. He was fond of study and of reading. He had graduated from college.

He had never had any severe sickness, nor any injury, was not strong, had a delicate stomach, was very nervous. He had run down from worry as to his mother's health and from close application to his studies; he had an attack, which was called grippe, after which there had been intestinal disturbance, attended with a looseness of the bowels. For a while he had passed three or four quarts of urine in twenty-four hours, which was said to contain sugar. During his last year in college he was obliged to stay in bed much of the time, studying in bed.

His eyes were almost immovable, no motion being more than a few lines in extent. In reading he moves his head from left to right and back to left, following the lines of print across the page. When closed, the lids are tremulous; they do not fully close, especially the right. The right pupil reacts to light only in sympathy with the left; if the right is exposed alone it remains about one half dilated. The left pupil reacts normally to light. For near vision both pupils react slightly. The field of vision is nearly or quite normal in both eyes. Both disks are indistinct in outline, the left the more so; the vessels are clear in their whole course; there is no distinct cupping.

When not reading there is a constant, not extensive, rotation of the head to the left, then back to the median line, irregular, slow, not jerky. The left hand is kept by his side, fingers closed; the right hand by his side, fingers extended; at times there is an athetosic movement of the fingers, more on the right. He can perform all motions; touches his nose readily, with fingers of either hand, with his eyes closed. When the arms are extended there is a tremor of the right; the left is nearly steady. The tongue is protruded with a motion of the tip athetosic in character. He walks without trouble, slightly unsteady. Knee jerk and plantar reflex are normal. When seen, no sugar in urine.

About two years after I saw him Mr. S. died. As he lived at a distance from Boston, I did not learn of this until some time later.

This affection is of special interest as being not only congenital, but also a family disease, and in many cases hereditary. It deserves as much consideration as other family diseases. Thirty-three persons belonged to only nine families, two or three generations being affected. In five families, including twelve persons, only one generation was affected. In one family in a collateral branch, cousins, were said to have had the same defects as the two brothers. (Reported by 11.) That is, in fourteen families, more than one in each family, forty-five in all, suffered from congenital ophthalmoplegia externa in a greater or less degree. In twenty-nine families there was one patient in each family.

Of the seventy-four cases of which reports have been found, 45 were males, 27 were females; the sex of 2 is not given.

The amount of loss of power in the muscles varies greatly in different cases, and in different muscles in the same case, from a slight impairment to complete loss of power. The muscles on the two sides may be unequally affected; often only one or two muscles are paralyzed. Sometimes the internal rectus is paralyzed so it does not act alone, but it will act in conjunction with the external rectus, as it has two sources of innervation. In a few cases the superior rectus is said to have been paralyzed, yet when the lids were closed the eyes rolled up as if the superior rectus acted.

The amount of loss of action in the levator palpebræ varies greatly; sometimes the lids cover the whole cornea, generally only a part, and usually the amount of paralysis is not equal on the two sides. Very often the frontalis enables the patient to raise his lids enough to uncover at least a part of the pupils. Sometimes an extra strong exercise of the will enables the patient to move his eyes through a small arc in certain directions, but this power is soon exhausted.

In most of the reports the oblique muscles are not mentioned and it is very difficult to determine from the description of the symptoms whether or not they were paralyzed.

A large majority of the patients had some defect in vision, either diminished visual power or some refractive error. The pupil reflexes were impaired in only three cases. Diplopia was rare. The fundus was usually normal.

In twenty-eight cases all the recti were more or less paralyzed. In ten cases the recti innervated by the third nerve alone were affected. The external rectus alone was paralyzed in fourteen cases; the levator palpebræ in fifty-three cases.

The pathological changes which cause congenital ophthalmoplegia externa may be found in the muscles or in the nerve nuclei in the medulla. It is not likely to be in the nerves as the paralysis is too sharply limited to a few muscles for the lesion to be where the fibers for so many muscles lie as near each other as they do in the third nerve.

In six patients (reported by 3, 13, 30, 33, 34, 37), there has been found a change in the structure of the muscles when an attempt has been made to correct strabismus by an operation; the muscles were either wanting or were reduced to mere fibrous bands, or were evidently very weak, yielding readily to slight traction. In one case (reported by 19), the patient died from diphtheria and an autopsy showed that one levator palpebræ superior was wanting, the other very weak; the recti and oblique muscles were inserted abnormally in the globe so they could not move the eyes in the proper directions. Having found the muscles thus affected in so many cases, all in which there are reports of operations, it is probable that the same condition exists in many others.

Several authors have entirely ignored the pos-

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sibility of a muscular origin and have referred all cases to nuclear origin. No examination of the nuclei of the nerves in congenital cases has been found. Several times in ophthalmoplegia externa not congenital, such changes have been recognized, and probably they exist in many of those in our list.

As the nucleus of the superior and inferior recti is distant from that of the external rectus, and there are no commissural fibers connecting these nerves, as are found between the internal and external recti, a single lesion could not be the cause of the impaired innervation of all these muscles. In those cases where all the recti acted imperfectly, was there defect in the insertion or development of the muscles due to some vice of intra-uterine growth, as was found in a few cases; or were the nuclei of the third and sixth nerves at fault from some intra-uterine affection similar to polio-encephalitis?

In six cases (reported by 7, 8, 9, 16, 17) there was loss of power or paralysis in the external rectus and the facial muscles. The sixth and seventh nerves do not run near enough to be affected by the same lesion after leaving the medulla without other nerves being also implicated. Only where they are adjacent in the medulla, where the fibers of the seventh curve around the sixth nucleus at the eminentia teres to pass to its nucleus, do the two nerves lie so near that both are liable to be exposed to the same morbid changes. In these cases the lesion was undoubtedly at or near the nuclei of these nerves.

In two cases (reported by 4, 29), there were difficult births; in one, softening of one side of the pons and of the right corpora quadrigemina was found as result of injury at the time of birth. In my case there was also difficult birth and the cerebral lesion extended beyond the origin of the motor oculi nerves.

It is evident that lesion of the nuclei in the medulla is sufficient to produce paralysis of the muscles of the eye and probably that is the only pathological change in many cases. Whether such a lesion is the cause of the change in the structure of the muscles found in so many patients, we do not know, as post-mortem examinations have been lacking. This is a field for future investigation.

The distribution of the blood vessels in the medulla, the floor of the fourth ventricle and the aqueduct explains the limitation of the lesions. The arteries entering the mid-brain are very small, are end-arteries; they have very limited or no anastomoses and each supplies only a small area of the cerebral substance. An occlusion or narrowing of the caliber of one of these arteries would deprive a very limited area of its normal blood supply without affecting neighboring areas, hence only one or a few groups of nerve cells would be destroyed or their activity seriously impaired. The general freedom of the intrinsic muscles would be explained by the more anterior situation of their nuclei, probably insuring them a larger and more certain blood supply.

In six cases (reported by 8, 9, 11, 16, 23), there were clearly other signs of defects in intra-uterine growth, as feeble memory, deformed hands and feet, clubfeet, right hand wanting and right arm short, muscles generally flabby and weak, absence of patella and Achilles reflexes.

Why should the condition be hereditary or a family peculiarity in so many cases?

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## THE TECHNIC OF ARTHROTOMY. A REPORT UPON AND DISCUSSION OF ONE HUNDRED AND NINETY-EIGHT CASES.

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(From the Orthopedic Clinic of the Carney Hospital.)

[Continued from No. 18, p. 692.]

ERASIONS.

(Female.)

Case 94. M. F., female, nineteen, single. Operation, July 17, 1903.

Same incision used as for complete excision of the knee-joint. When joint was opened and knee flexed, a small pannus was seen beginning to encroach upon the cartilage of the femur. A small area of soft bone and thin cartilage was noted on the inner aspect of outer condylar articulating surface. This area was excised and pannus removed. Head of tibia and remaining portion of joint normal in appearance.

Discharged Aug. 19, 1903, wearing plaster cast.

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May 18, 1904. Ten degrees motion in joint. No swelling or sensitiveness. Wearing leather cast.

June 1. Omit cast four hours daily.

July 6. Pain from over-use during past two weeks. No evidence of renewed activity of disease.

1908. Patient has never had any recurrence of the disease, but has no motion now in the joint.

CASE 95. S. B., female, fifteen, single. Operation, Aug. 28, 1903.

Same incision as for excision. Joint fluid, wine color in appearance. No flocculi present. A considerable amount of adipose tissue, "boggy" in nature, distributed throughout joint, some of which resembled granulation tissue. Most of this tissue was adherent to internal condyle of femur and showed a tendency to encroach upon its cartilaginous surface. Joint cartilage showed its only abnormality in a lack of luster. All abnormal tissue was removed and cartilage carefully curetted so as not to injure normal tissue.

Sept. 14. Discharged wearing cast.

Oct. 17, 1905. Knee has remained stiff since operation. Under anesthesia knee was manipulated and a few degrees of motion obtained.

Oct. 26. Patient has a few more degrees of motion than when she returned to the hospital. Discharged unrelieved.

April 4, 1906. Motion of 15°. Walks with limp.

CASE 96. H. R. C., female, twenty-three, single. Operation, Aug. 17, 1904.

Same incision used as for excision. As soon as joint was opened a small amount of straw-colored fluid was liberated and a few grayish-purple granulations protruded from the wound. The entire anterior surface of joint was covered with this same tissue. Immediately below internal condyle of femur a similar mass of tissue was found, which when excised and when opened proved to be cystic, contained cheesy material and clear fluid. The external and internal condyles were covered with a purple pannus. All pathological soft parts removed and pannus curetted off as much as possible. Patellar ligament restored with three heavy silk sutures. Posterior wire splint.

Aug. 25. Cast applied. Pain upon attempted motion. Discharged home.

Ultimate result was a pathological cure and ankylosis.

CASE 97. A. E., female, twenty-four, single. Operation, Nov. 19, 1906.

Same incision as above. When joint was opened a small amount of straw-colored fluid containing "rice bodies" escaped. Synovia redundant and rice bodies attached. Pockets behind the crucial ligaments containing this same material were excised. Bursæ between semimembranosus and tendinosus similarly treated. One small focus curetted out from anterior aspect of inner tuberosity of tibia. Partially detached portions of the semilunar cartilage removed and areas curetted from the cartilaginous surfaces of both bones. Posterior wire splint.

Dec. 3, 1906. Plaster cast applied ankle to groin.

Jan. 1, 1907. Cast changed and patient discharged to St. Luke's Home.

During the following year the patient gradually improved and obtained a little motion, but not enough to be of practical value to her. She then went to her home in Sweden and reports (1909) that she has not been able to work because of the poor motion in the joint. There does not seem from her description to be any sign of disease.

There were 13 erasions, — 9 in men, 4 in women. There was one slight skin infection among these. One case was so bad when we got inside the joint that an excision was attempted, but the disease extended so far into the tibia that a thigh amputation had to be done. He is now (1910) using an artificial limb and has had no trouble from the leg. One of these cases was a wrist. The others were all tuberculous knee-joints. There was one death among this group and that was a few days after leaving the hospital and was due to tuberculous meningitis.

It will be observed in studying the cases in this group, viz., the excisions and erasions, that the danger of disseminating a tuberculous infection through surgical procedure is not a wholly negligible matter. Care must be exercised to allow nature to start her protective immunizing processes, both local and general, before one takes the risk of opening up new tissue to infection and absorption.

Our technic of approaching the semilunar cartilage has undergone more changes than that of any other operative procedure upon the joints. The great difficulty is to persuade oneself to get the center of the incision far enough down upon the femoral condyles. The modification of the method employed which was suggested by Mr. Robert Jones, of Liverpool, has proved most helpful. By making the skin incision a straight one, having its center over the line of the joint, and then flexing the leg over the end of a table, the cartilage will present at once when the capsule is incised. The removal of the detached portion should then be accomplished, using either a tenotome or a long-handled, short-bladed pair of scissors. Nothing but the instruments ever need enter the joint cavity. The capsule should be closed carefully and by a separate row of catgut sutures which should be sufficiently resistent to digestion so that they will remain at least three weeks. Then close the fibrous capsule by a second row of such sutures and the skin with a continuous catgut or an interrupted silkworm gut. If there is much ooze in the joint, it is better to use interrupted sutures and insert a pedicle silk seton for thirty-six hours.

Fixation in plaster or upon posterior wood or wire splints after the operation has been abandoned at this clinic because there seemed no surgical advantage during the first week, and after that period mobilization is what is desired, and that can best be secured by not having any initial stiffness due to splinting to overcome. Passive motion, fomentation and massage are indicated at the end of the first eight days, and in the course of the third week right-angled flexion should be secured, and then weight-bearing and voluntary motion may be permitted. A flannel or a "Bender" bandage should be worn for a month or six weeks, and massage had better be continued throughout this entire period. The removal of joint mice requires no essential modification in technic, except that it is well to know that the back of the knee-joint is readily reached by an incision through the popliteal space, care in avoiding the vessels and nerves in this situation being the only thing of special importance. In certain cases the mice are only to be found in this posterior pouch of the joint. It is not safe to attempt the

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removal of these loose bodies under local anesthesia. They may slip away, and in attempting to find them there is great danger of breaking the asepsis and infecting the joint. It is always best to search for more than one, though only one may have presented itself. They often hunt in pairs. The greater frequency of the occurrence of displaced internal as against external cartilages has been emphasized by our experience. We also would call attention to the constancy with which the semilunar displacements are accompanied by hypertrophy of the alar ligament nearest to the dislocated cartilage and the advisability of removing this at the same time that the cartilage is removed.

SEMILUNAR CARTILAGE.

(Male.)

Case 98. J. S., male. Operation, Nov. 15, 1901.

A five-inch linear incision over inner aspect of left knee. Internal semilunar cartilage found detached except at its outer end. Entire inner segment of cartilage removed. Wound closed and light plaster cast applied with leg in extended position. Cast continued one week.

Nov. 22. Discharged. Convalescence uneventful with complete restoration to normal function.

Case 99. F. G. T., male, thirty-seven, married. Operation, Feb. 10, 1905.

Right knee-joint opened on inner side of patella. When capsule was incised about 5 oz. of straw-colored fluid were removed. A hyperemic area was found on cartilage of inner condyle of femur. The anterior and inner portion of the cartilage was dislocated and was removed. Wound closed.

Feb. 24. Discharged. Convalescence uneventful.

Patient had no subsequent symptoms referable to the knee-joint.

Case 100. J. F. S., male, forty. Operation, Nov. 20, 1905.

Left knee-joint opened over inner aspect. When capsule was incised a greenish, semifluid substance was evacuated and the tip of the internal semilunar was found detached. This was removed and a small villous fold attached to inner capsule was also excised and wound closed.

Nov. 28. Discharged.

Patient regained motion rapidly and at last visit to Out-Patient Department had no symptoms from the operated knee.

Case 101. J. McM., male, fourteen, single. Operation, May 18, 1906.

Curved incision made over outer aspect of left knee. Over head of fibula on joint line a mass was dissected away which was found to be a portion of the external semilunar cartilage. The remaining portion was also excised and wound closed.

May 29. Discharged. Convalescence uneventful.

No subsequent symptoms from this joint.

Case 102. T. W., male, thirty-six, married. Operation, June 8, 1906.

Semilunar incision over inner aspect of right knee-joint. Internal semilunar cartilage displaced and there was considerable fatty growth about the ligamentum alaria. The cartilage and lipomatous growths were removed. Wound closed.

June 22. Discharged. Convalescence uneventful.

No history of subsequent symptoms.

Case 103. S. H., male, thirty-nine, married. Operation, April, 1908.

Left knee opened on inner side. Internal semilunar cartilage partially detached. This was removed and also the infra-patellar fat pad, which was larger than normal. Nothing further abnormal found in the joint. Wound closed.

April 28. Discharged. Convalescence delayed by a stitch abscess.

Case 104. H. G., male, twenty, single. Operation, May 19, 1908.

Right knee opened over inner aspect. Internal cartilage only slightly detached and not dislocated. Anterior portion of capsule showed villous thickening. This was removed and cartilage excised.

June 3. Can flex knee beyond a right angle without discomfort. Discharged.

July 10, 1908. Favors knee slightly when walking. Motions normal. No pain or tenderness. ℞ Hydrotherapy.

Case 105. J. F., male, twenty, single. Operation, May 19, 1909.

Left knee-joint opened on inner side. Considerable excess of fluid. Internal semilunar cartilage folded and anteriorly displaced, but still attached. Whole inner, anterior cartilage removed, which allowed complete extension.

May 25. About 20° active motion.

June 4. Motion to a right angle.

June 11. Motions normal.

Case 106. J. D., male, twenty-six, single. Operation, May 26, 1909.

Left knee-joint opened on external aspect. Subpatellar fat pad enlarged; external semilunar not detached, but easily displaced outward. Portion of fat pad and cartilage removed. Wound closed and light plaster cast applied.

May 31. Motion to a right angle without pain.

June 21. Motion normal.

Case 107. J. W., male, twenty-three, single. Operation, June 7, 1909.

Left knee opened over outer aspect. Considerable excess of straw-colored fluid. Small subpatellar lipoma removed. Loose external semilunar cartilage was also removed. Wound closed and light cast applied.

June 13. Motion to 40° without pain.

June 20. Discharged. Motion to a right angle. Patient was heard from about three months later and reported a perfect return of function to knee.

Case 108. J. C., male, twenty-six, single. Operation, July 28, 1909.

Knee opened over inner aspect. Knee flexed in Jones position and a partially detached cartilage easily dissected out. Wound closed.

Aug. 8. Convalescence normal to date. Discharged to care of his own physician, who later reported a perfect return of function.

Case 109. A. O., male, thirty-four, married. Operation, Dec. 8, 1909.

Left knee opened over inner aspect. Knee flexed as in last case and internal semilunar cartilage found detached and was removed.

Dec. 22. Rapid recovery of normal function, which was preceded by a slight stitch abscess. Discharged.

Jan. 3, 1910. Motions of knee normal. Patient walking about with cane.

Case 110. D. D., male, sixteen, single. Operation, Dec. 29, 1909.

Right knee-joint opened over outer side. External semilunar cartilage partially detached and removed in two pieces.

Jan. 3, 1910. Patient comfortable. No pain or tenderness.

SEMILUNAR CARTILAGE.

(Female.)

Case 111. A. K., female, twenty-one, single. Operation, March 13, 1905.

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Right knee-joint opened by 7 cm. incision over inner anterior aspect. When capsule was opened, considerable synovial fluid escaped. Several fat tabs were adherent to the alar ligament and anterior aspect of capsule, several of which were removed. Anterior and inner portion of internal semilunar being partially detached, was excised. Wound closed and light plaster cast applied.

March 25. Active motion, 15°.

March 29. Discharged. Active motion to right angle.

CASE 112. L. E., female, twenty-eight, single. Operation, May 10, 1907.

Incision 2 inches on inner side of right knee. Anterior portion of internal semilunar found loose. This was removed; also the greater portion of infrapatellar fat pad. Four strands silk left between stitches as wick to be removed in three days.

May 22. Passive motion daily. Very little pain. Discharged.

Jan. 2, 1908. Knee is becoming flexed and aches constantly. Re-entered hospital. Right knee in 25° permanent flexion. Extension limited. One cm. atrophy over right patella. A prominent ridge can be felt to inner border of patella. A loose bony fragment seems to be present, sensitive to pressure and the seat of a marked click when leg is flexed. This fragment seems to offer mechanical obstacle to complete extension.

Jan. 3. An anesthetic given and incision made parallel and close to old scar. Line of joint obscured by a fragment of partly cartilaginous, partly calcified tissue, which had the appearance of a displaced semilunar cartilage turned so that the broad surface which is normally attached to the head of the tibia was parallel with the long axis of that bone. The fragment was firmly bound down to tibia by fibrous adhesions. When this fragment was removed the leg could be almost completely extended without force. A few degrees of flexion remain. Plaster cast applied.

Jan. 13. New cast applied. Discharged home.

CASE 113. E. B. M., female, twenty-one, single. Operation, Feb. 11, 1908.

Incision 5 cm. in length over outer side of knee. Anterior border of external semilunar cartilage found detached. This is removed, together with the enlarged infrapatellar fat pad. Plaster cast ankle to groin.

Feb. 19. Convalescence uneventful. No pain. Active motion to 45°.

Feb. 24. Patient able to walk about the room and little discomfort is caused thereby. Voluntary flexion to a right angle. Discharged home.

CASE 114. J. A., female, single. Operation, March 10, 1909.

Incision 3 inches long over inner side of right knee. When knee was flexed internal semilunar cartilage seen to protrude over anterior margin of tibial head. Anterior portion removed.

March 19. No pain or temperature. Wound healed. Motion in the joint to a right angle.

March 23. About on crutches. Discharged home.

Subsequent history, complete return of function in joint.

All the cases in this group did well with the exception of one, and that was No. 110.

She was an hysterical case, and in light of the subsequent history her case is easily understood. The joint eventually was restored to very good function.

JOINT MICE.

CASE 115. C. C., male, twenty-one, single. Operation, Feb. 21, 1906.

Right knee-joint opened over outer side. The foreign body appeared as soon as the capsule was incised. The joint was explored with the finger and no other foreign bodies found.

March 3. Convalescence uneventful. Discharged.

No history of recurrence or further symptoms from the joint.

CASE 116. A. S., male, nineteen, single. Operation, Oct. 10, 1906.

Right knee-joint opened over inner aspect. In synovial pouch at inner side of joint a white, smooth, unattached body, size of almond, was found and removed. A calcareous area in the center was seen when body was split open. Joint opened on outer side and a second foreign body removed. Wounds closed.

Oct. 22. Discharged. Convalescence rapid and progressive.

CASE 117. W. J. K., male, forty-three, married. Operation, Oct. 7, 1907.

Left knee opened over inner aspect. Several osteophytes found on tibial condyle, most of which were removed, and one free body found and removed. Outer side of joint opened and a similar though smaller body removed. Wounds closed.

Oct. 15. Flexion to 90° without pain.

Oct. 19. Flexion beyond a right angle without pain. Discharged wearing flannel bandage. No subsequent symptoms.

CASE 118. E. F. P., male, thirty-two, single. Operation, Dec. 30, 1908.

Examination under ether did not reveal the foreign bodies. Tourniquet applied. Right knee opened over inner aspect. Synovial membrane, quadriceps pouch, and immediately about the incision evidence of capsule thickened as in a villous arthritic condition. Considerable excess fluid containing few inspissated clots of fibrin. Several hypertrophied tags dependent from the alar ligaments. In the mid line of the joint below the patella and attached to infrapatellar fat pad was a small dependent calcareous tag which was excised, and measured $\frac{3}{8}$ by $\frac{1}{4}$ inch. Two small loose bodies found in posterior part of joint by forcible pressure on the popliteal space. Margin of trochlear surface hypertrophied throughout. In places this hypertrophied tissue overlaps the bony surfaces beneath. Patella presents broad surface at base due to this pathological condition of cartilage. Small scars on femoral condyle indicate the site from which these loose bodies were detached. Irrigated with sterile water and wound closed.

Jan. 12. Discharged after a normal convalescence.

CASE 119. W. M., male, fourteen, single. Operation, June 25, 1909.

Joint opened on inner side. No fluid. Beneath hamstring tendons was found detached a large, round, hard mass, size of a cherry. Rough area in inner condyle showing place of detachment. Wound closed.

June 28. Motion to right angle.

July 6. Discharged. No recurrence of symptoms to present date (1910).

As in the cases of semilunar operations, the results have been good, and no untoward circumstances attended any of the cases. We would urge the importance of avoiding operative interference in these cases until after the joint had been kept at rest for a few days and the traumatic exudate had become absorbed and the injured synovia had become quieted down.

VILLOUS ARTHRITIS, INFECTIOUS ARTHRITIS.[4]

This group is concerned chiefly with the knee-joint, though some other articulations are in-

[4] In this group the joint lesions were generally polyarticular, but the larger joints of the locomotive apparatus were the ones subjected to surgical treatment.

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cluded in the list of cases. The technic employed is similar to that in other arthrotomies, at least as far as the methods of performing the operations are concerned.

We have often employed two straight incisions on either side of the patella. With scissors the large fringes and villous enlargements are removed. The bases of these fringes cicatrize and the synovial membrane grows over the base. It is well to wash out these joints with hot, sterile salt solution before closing the capsule, and they ought always to be drained with setons for forty-eight hours. Early manipulative treatment should be the rule in these cases. The therapeutic conditions met by arthrotomy in these cases are (1) the removal of toxins which, if allowed to remain, would be damaging to the joint; (2) the removal of the products of the previous inflammatory conditions even when they are not capable of exerting any toxic influence upon the joint; and (3) the removal of fringes whose presence in the joint are a mechanical irritant preventing the restoration of the synovia to a normal condition.

Physical therapy, principally in the form of stimulating douching with hot and cold water, protective splinting to guard against overstrain, and bandages to keep down swelling and control the extremes of motion, are indicated. Massage has to be guardedly employed in these cases, particularly where the infection has been a recent one.

The growth of a pannus over the margins of the articular cartilage should be removed where it is evident by an arthrotomy, for its persistence inevitably means cartilaginous erosion.

INFECTIOUS ARTHRITIS.

(Female cases.)

Case 120. A. D., female, twenty-six. Operation, July 30, 1906.

Curved incision over outer side of right ankle and capsule of cuneiform-metatarsal articulation exposed. Cartilage lifted off anterior articular surface of cuneiform. A section of the cuboid was removed. No pus found.

Aug. 7. Stitches removed. Slight serous discharge. Plaster applied, with window for dressing.

Aug. 14. Discharged.

Case 121. S. A., female. Operation, Feb. 19, 1901.

Linear incisions made on either side of the patella. All capsular adhesions were broken up above and below patella. Small area of roughened bone noted on under surface of patella. Wounds closed leaving gauze wick under patella.

Feb. 22. Patient has required sedatives to relieve pain in joint. Gauze wick removed under anesthesia and posterior wire splint used.

April 15. Discharged home.

Case 122. J. P., female, twenty-three, single. Operation, Aug. 27, 1901.

Linear incision 8 cm. over outer aspect of left knee. Capsule thickened, and when incised about 20 ccm. turbid fluid escaped. Several small synovial outgrowths were present, which were excised. Joint cavity irrigated with hot bichloride solution. Plaster bandages applied to leg. A study of the fluid shows abundant pus cells; no bacteria; culture negative.

Sept. 4. Wound clean. Hot fomentations b. i. d. Discharged.

Case 123. K. F., female, sixteen, single. Operation, Sept. 3, 1901.

Right knee opened over outer anterior aspect. Capsule found very thick and vascular. Joint cavity was small. Some fluid present which contained flocculi of fibrin and blood clots. A few synovial "tags" were removed. Hot corrosive irrigation. Plaster of Paris bandages to leg.

Sept. 11. Cast split. No pain except with motion.

Sept. 18. Stitches removed. Wound clean. Pain and tenderness on motion.

Sept. 19. Leg manipulated to 40° under ether.

Sept. 25. Passive motions daily. To leave off cast two hours daily.

Sept. 29. Under anesthesia complete flexion and extension obtained.

Oct. 4. Passive motion to 80°. Left in this position two hours, then flexed and split cast replaced.

Oct. 9. About on crutches. Ninety degrees flexion possible.

Oct. 13. Passive motion to right angle without pain. Active motion limited. Discharged home.

Case 124. A. L., female, fifteen, single. Operation, March 4, 1904.

Incision over inner side of right knee. About 2 oz. of creamy, pale yellow fluid escaped upon opening the capsule. Synovia thickened, hemorrhagic, and presented several ragged tags, .5 to 1 cm. in length. These were removed. Joint irrigated with hot salt solution. No wick used for drain. Plaster cast.

March 14. Cast split. No pain accompanying the slight amount of motion tried.

March 15. Flexion of 15° obtained.

March 18. Under ether leg flexed beyond right angle, causing the rupture of several adhesions. Leg put up on pillows in position of 45° flexion.

March 23. Flexion to 90°.

March 29. Complete extension impossible, owing to thickening of soft parts. To use hot and cold showers at home.

Case 125. A. O'N., female, forty, married. Operation, May 6, 1904.

Inner condyle of left femur exposed through long linear incision through an excess of subcutaneous fat. Synovial membrane seemed converted into a more or less lobulated mass of fat, and joint cavity smaller than normal. Along the border of the condyle the cartilage was hypertrophied and formed a shelf-like projection extending upward ½ inch on the femur. This ridge seemed to be composed of irregular squares of cartilage. The upper edge of the patella presented a similar pathological process. A slightly vascular pannus was situated beneath the projecting ledge of cartilage. Both were removed and joint cavity closed. Plaster cast applied.

May 9. Pain in the knee for two days, but not complained of to-day. Cast removed.

May 25. Convalescence uneventful. Good motion. Advised hot and cold showers at home.

Specimens show hypertrophic arthritic condition. Ultimate good operative result. Had a similar set of symptoms with other knee which improved without operation.

Case 126. L. L., female, thirty-two. Operation, Dec. 8, 1905.

Left knee, left elbow and both wrists manipulated four days preceding without relief.

Incision 8 cm. over inner border of left knee. Subcutaneous tissues very vascular. When capsule was opened, the synovial membrane measured 0.4 cm. in thickness, its surface thrown into purplish ridges. Joint fluid normal in amount. Attached to the alar ligaments

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was found a large fringe 3 cm. long, 2 cm. wide, movable and attached by broad base. Several small fringes found throughout the joint. A few patches over middle of external condyle, but no definite erosion. Two spine-like processes on the under surface of the patella, which probably caused the conditions on the trochlear surface above mentioned. Plaster cast with leg in extended position. Fingers, left elbow and wrists were again manipulated.

Dec. 9. Plaster casts split on account of pain.

Dec. 19. Tonsillitis accompanied by excerbation of knee symptoms readily yielded to treatment.

Dec. 22. Cast removed.

Dec. 26. Only 10° motion of knee; joint very sensitive.

Jan. 2, 1906. Discharged relieved. Motion in knee gradually increasing.

CASE 127. M. T., female, fifty-three, married. Operation, Jan. 21, 1905.

Under anesthesia knee was forcibly flexed and extended a few degrees. Patellar adhesions prevent further motion. Incision made over inner aspect of right knee. Synovia very vascular. Patella freed with blunt dissector and chisel. Considerable gain in extension, but incomplete owing to contracted hamstrings. The internal hamstring was tenotomized. Plaster cast applied with leg fully extended.

Feb. 3. Convalescence uneventful. Discharged.

CASE 128. F. L., female, twenty-four, married. Operation, Aug. 16, 1907.

Incision 4 inches long over the outer side of left knee. Large prepatellar fat pad. Also large amount of disintegrated fat found in joint and removed. Capsule and surrounding tissues congested.

Aug. 29. Convalescence uneventful until yesterday, when, without instructions, patient bore her weight upon knee. To-day complains of considerable pain.

Sept 12. Except for above indiscretion and temporary results, convalescence progressive. Discharged home.

CASE 129. A. G. G., female, twenty-three, single. Operation, Feb. 19, 1908.

Left knee-joint opened by linear incision over outer side. Synovia thick and fibrous. Joint cavity small owing to adhesions in quadriceps pouch and between patella and femoral condyles. Patella freed by instruments, in consequence of which complete extension and flexion were possible to a right angle. Plaster cast applied with leg in full extension.

March 4. Discharged relieved.

CASE 130. J. L., female, twenty-seven, married. Operation, Oct. 14, 1908.

Left knee-joint opened over inner side. Capsule thickened. Patella adherent and quadriceps pouch obliterated by adhesions. Adhesions freed and joint irrigated with hot corrosive solution. After closing joint 3 oz. of sterile olive oil was injected under patella.

Oct. 21. Leg manipulated under ether.

Oct. 28. As knee is too sensitive for any passive motion, an anesthetic was administered and leg manipulated, after which procedure 3 oz. of oil was again injected under patella.

Nov. 4. Moderate swelling of joint. Very painful when motion is attempted. About 5° motion in flexion. Sensitive over internal condyle. Patella barely movable. Discharged home before it was advisable, owing to family difficulties. Neglect and improper treatment followed and a bad result obtained.

Jan. 1, 1910. Knee very sensative to jar or motion. A few degrees flexion possible. Probable Neisser infection.

CASE 131. M. O'C., female, twenty-seven, single. Operation, Jan. 13, 1909.

Incision made over inner side of right knee. Quadriceps pouch bound down with adhesions of the organized exudative type. These were wiped out with sterile gauze and joint irrigated with hot salt solution after knee had been flexed to a right angle.

Jan. 16. Patient has run a subnormal temperature since she entered the hospital. Knee very sensitive to passive motion beyond 15°.

Jan. 27. About 20° passive motion and 10° active without discomfort to patient.

Feb. 3. Under ether adhesions were broken up when leg was flexed to a right angle. About 2 oz. of sterile olive oil was injected under patella and leg again flexed.

Feb. 17. Same procedure as in last note.

Feb. 20. Discharged. Gain in motion has been progressive but slow. The general condition of the patient was below par when she came under hospital treatment due to toxemia from long-standing Neisser infection. A miscarriage of four months while in the hospital also retarded convalescence. Fair delayed result, however.

CASE 132. E. W., female, twenty-three, married. Operation, April 7, 1909.

Skin incision as for excision of joint except that on outer side it was carried about one inch above top of quadriceps pouch. Patellar tendon cut and flap containing the freed patella dissected back. Fibrous ankylosis throughout the joint. This was broken up with knife and chisel and leg flexed to right angle. Skin was dissected back and long flap of adipose tissue with pedicle to outer side was dissected out, turned down between opposing bony surfaces and sutured, after first removing a thin slice of the lower end of the condyles. Patellar tendon restored with silk. Plaster cast applied.

April 19. Window cut and superficial slough found over inner condyle.

April 26. Cast removed and posterior wire splint substituted. Evidence of large slough over patella.

May 1. Large area of skin removed due to its gangrenous condition and hot enzymol packs continuously applied. This slough due to cutting the flap too near the skin.

May 7. Wound clean except for small area above tibial tubercle. Dressed with balsam Peru.

May 27. Some motion in knee, but little attempt made to move it on account of interfering with granulations.

June 2. Skin grafts taken from opposite thigh and transferred to granulating area over knee.

June 9. Three long skin grafts taken and wound covering over rapidly. Discharged home to-day.

CASE 133. J. S., female, forty-nine, married. Operation, July 9, 1909.

Incision outer side of right knee. When capsule was opened a large amount of red granular material was evacuated. A small lipoma was found under patella and removed. Numerous fringes removed and joint wiped out with sterile gauze and then irrigated with hot salt solution.

July 12. Patient has been very comfortable and is out of bed.

Aug. 1. Continues very comfortable. Swelling of fingers has subsided. Measured for caliper splints and discharged home.

The results of the previous series of operations have been quite satisfactory when the conditions for which they were performed are taken into consideration. One case of arthroplasty of the knee is included where it does not perhaps properly belong. There were no infections or

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serious complications in any of the cases and motion was secured to certainly as great an extent as it was present before the operation, and in many cases it was greater. Even where the motion was not increased, the function of the joints was often markedly improved and the progress of the disabling arthritis in that particular joint at least was checked or retarded. Improvement in general condition was often associated with the removal of the contents of these infected joints. Toxic absorption from these chronic joints as well as from the more acute ones goes on to a considerable extent in many cases and evacuation of these toxic materials is important.

Case 134. J. W., male, thirty-six, married. Infectious arthritis. Operation, Feb. 3, 1905.

Right elbow-joint opened by incision 8 cm. in length over outer aspect of joint. When head of radius was exposed, the cartilage covering the head was redundant and a portion of this was removed. A similar incision made over inner side of joint and ulnar head exposed. The same pathological condition was found to exist there also. Arm could then be brought to within 5° of a right angle. Arm put up in extreme flexion. Left arm also put up in cast.

Feb. 7. Some swelling of right hand. Plaster removed and extension held by bandages.

Feb. 14. Plaster reapplied.

Feb. 25. Both arms manipulated under ether, and cast reapplied to right in flexion.

March 9. Discharged. Left arm much improved.

April 10. Flexion of right arm to right angle; extension to 35° beyond a right angle. Left elbow to 107° and extended to 40° beyond a right angle.

Case 135. H. L. F., male, twenty-four. Operation, Dec. 21, 1901.

Incision made parallel to sheaths of perineal tendons, left foot. These were found thickened, but not infiltrated. Incision carried forward over joint between the cuboid and astragalus; the joint was opened, exposing two small fringes and an overlapping ridge on the astragalus, all of which were removed and the wound was closed.

Patient discharged in ten days.

Case 136. J. B., male, forty, married. Operation, May 14, 1902.

Left ankle-joint opened by two incisions, one parallel with peroneal tendons, the other parallel with the tibialis posticus tendon. Several small vascular fringes found and removed. Cavity then lightly curetted and washed out with sterile water. Peroneal tendons divided in order to facilitate access to the joints of the posterior tarsus.

June 4. Convalescence uneventful to date. New cast applied and patient discharged relieved.

Case 137. N. F., female, atrophic arthritis with synovial hyperplasia (early), forty-eight, married. Operation, Jan. 27, 1904.

Usual linear incision made over inner side of right knee. Capsule found thickened to about 1 cm., and of a grayish gelatinous appearance. A small amount of clear, yellow fluid was enclosed. Digital examination revealed one small tab from synovial surface in lower angle of wound which was removed. Similar incision over outer side of joint, and a few small tabs found similar in nature to above. Synovial membrane was everywhere thickened and congested.

Wounds closed and plaster cast applied.

Feb. 2. Cast removed. Wound clean.

Feb. 4. Knee can be flexed 15° without force.

Feb. 8. Passive motion daily. To-day 50° motion possible in flexion. No power of voluntary extension after passive flexion.

March 1. Has been wearing caliper splint during day over flannel bandage. Knee can be flexed to a right angle easily.

Discharged home.

Case 138. M. F. Operation, Nov. 8, 1908.

Both knees were forcibly extended. Both patellæ can be moved slightly and no crepitation elicited beneath. Capsule of knee not thickened, but synovial membrane adherent throughout considerable part of the joint, thus diminishing the size of the cavity very materially. No motion possible in flexion. On exerting moderate degree of force, adhesions were broken up, apparently more between opposing layers of capsule than between the bones of the joint. About 25° of flexion secured in both knees. More could have been obtained, but at too great risk of trauma to joint.

After manipulation, about 3 oz. of sterile oil injected under inner side of patella; considerable pressure necessary. The effect of the injection was apparent in the separating of the opposing layers of membrane as the distention of the capsule progressed.

Dry sterile dressing and bandage.

Nov. 12. Patient complains of great tenderness in both knees. No attempt made toward passive motion.

Nov. 23. Oil has apparently been entirely absorbed in both knees. Both patellæ freely movable, but very slight motion of either knee can be obtained in flexion. Tenderness persists.

To have massage to thigh and calf.

Dec. 9. Operation.

Regular U-shaped incision made with apex over tibial tubercle. Skin flap dissected back and joint opened. Adhesions broken up with fingers in quadriceps pouch. Capsule opened on inner side and remaining adhesions broken up. Patellar tendon divided midway between patella and its attachment, under surface much eroded and a small portion was removed with chisel. Leg forcibly flexed and many adhesions broken up between femur and tibia; both surfaces much eroded. Latter surfaces curetted. Head of femur covered with four layers of Cargile membrane, which was sewed to fascia with catgut. Head of tibia treated in like manner. Bones then approximated with extension to prevent tearing of the membrane. Patellar tendon united with several strands of silk. Capsule closed with interrupted silk sutures and skin with interrupted catgut. Attempt to introduce oil in joint failure, as it oozed out between the stitches.

Patient suffered slightly from shock.

Dec. 11. Patient has temperature of 101°. Pulse, 110. Respiration, 22. Plaster cast split owing to edema of foot, and flannel bandage applied to lower extremity.

Dec. 17. Wound in good condition. Posterior wire splint applied.

Jan. 18, 1909. Wound dressed. Silk suture removed from sinus external to tibial tubercle.

Jan. 27. Operation. Right leg manipulated and 20° motion obtained without much force. Considerable serous ooze from old incision.

Feb. 7. After the manipulation temperature shot up to 103°. Skin wound partially broke down. Culture showed pure staphylococcus aureus. Hot boric acid poultices applied and infection readily yielded to treatment.

Feb. 15. Wound broke down on outer side (over exterior condyle another stitch removed).

Feb. 26. Wound gradually healing. Three stitches (silk) have been removed. Sodium chloride and citrate solution applied. Dry dressing and bandage.

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March 10. No discharge. Wound practically closed. General condition of patient fair.

March 19. Patient sitting up to-day. No pain or temperature. Very slight motion of knee can be obtained.

April 4. Discharged home.

Patient had general atrophic process for a long time before the last operation, and same had been slowly progressive. It remains an open question as to the advisability of using Cargile membrane and as to operating upon cases with this diagnosis. Certainly no advantage has been gained from the arthrotomy in this case. Considerable difficulty was encountered from subsequent sloughing of the silk sutures used at time of operation. The entire Cargile membrane has sloughed out and there has been no benefit to the patient for all her suffering. The knees are straight and stiff, but there is so little power in her arms and hands that it is impossible for her to get up on her feet. The pain has largely disappeared.

*(To be continued.)*

## Clinical Department.

### CUTANEOUS DIPHTHERIA. FATAL PRIMARY CASE.*

BY EDWIN H. PLACE, M.D., BOSTON,

*Physician in Chief, South Department, Boston City Hospital; Assistant in Pediatrics, Harvard Medical School.*

CUTANEOUS diphtheria associated with diphtheria of the respiratory tract is not particularly uncommon. It has been seen at the South Department during the past three years in the following conditions:

(1) About the face and hands, often appearing much like an impetigo contagiosum, less often with distinct membrane. Cultures show virulent Klebs-Loeffler bacilli, and both types clear rapidly with the administration of antitoxin.

(2) On the auricle, chiefly the concha, extending from the middle ear; and behind the auricle inoculated upon the eczema so common in this region in children.

(3) Inoculated upon lupus vulgarus lesions on the face, following curettage.

(4) In wounds and abcesses on the neck and face.

(5) Inoculated upon varicella lesions, most commonly on the vulva or vagina.

At times it is severe in these locations, and similar cases of cutaneous diphtheria have been known to be the cause of small epidemics. That it may be fatal the following case shows. I am indebted to Dr. John H. McCollom for the privilege of reporting it.

H. B., age seven months. Admitted to the South Department March 24, 1908, referred by Dr. J. S. Stone, from the Children's Hospital Out-Patient Department.

*Family history.* — Negative.

*Past history.* — Breast fed. Had always been well except for eczema of pubic region, groins and thighs since birth.

*Present illness.* — Two days before admission, swelling and redness became marked over the area of the abdomen, genitals and thighs covered by the diaper. There was a considerable thin discharge. Feverish and fretful.

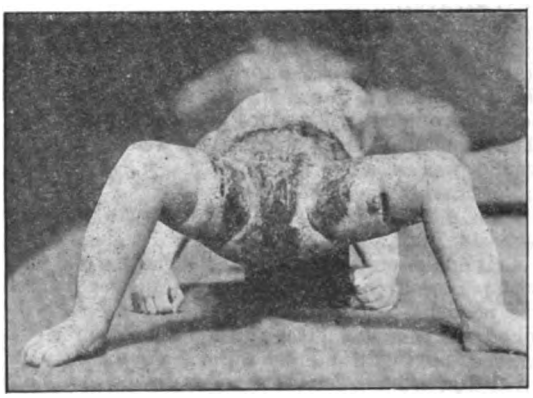
*Physical examination.* — Conscious, marked prostration. Well developed, fairly well nourished. Mucous membranes of mouth, throat and nose show nothing abnormal. No nasal discharge. Neck negative. Heart action rapid, 140, first sound softened, no murmurs. Lungs normal except for a few crackling râles at both bases.

Over the lower third of the abdomen, the vulva, perineum, anterior part of buttocks and the upper quarter of the internal surface of the thighs, the skin is markedly reddened, swollen and covered with a grayish hyaline membrane, firmly adherent, and when forcibly removed leaves a granular area which bleeds easily. Scattered through this area, especially the lower part, are small various shaped islands of healthy skin, some connected by narrow bands of healthy skin. No vesicles or pustules. Skin elsewhere normal.

The treatment was antitoxin, 12,000 units, strychnia and boric acid dressings locally.

On the third day after admission the membrane was clearing rapidly. No improvement in general condition; heart rapid and very weak. The temperature was subnormal on entrance, but this day rose moderately. During the day the color became of a peculiar gray shade, the heart weak, rapid, the first sound almost imperceptible. Numerous crepitant râles at the bases. Death occurred at 5 P.M.

Cultures from the skin showed typical diphtheria bacilli, and were identified by Dr. Lawrence Rhea by cultural tests and animal inoculation in the laboratory. Cultures from the nose and throat and from the nose and throat of the mother showed no diphtheria bacilli. The post-mortem showed, beside the skin lesions, some hyperplasia of the lymphoid tissue, "septic" spleen, begining bronchopneumonia of both bases and some pus in the middle ear.



The source of the infection was not discovered. There was no known exposure. Neither this child nor any other member of the family had had a sore throat, coryza or other illness recently. It seems probable that the mother or an attendant must have carried the disease on their hands and infected the eczematous lesions in washing the baby or changing its diaper.

The onset, masked by the previous eczema, was probably not recognized, and not until the process became widespread and the symptoms severe was a physician consulted. The severe systemic symptoms in this case may well be expected when we consider the extent of the membrane and the amount of toxin which must necessarily be absorbed.

* Read before the Boston City Hospital Alumni Association Annual Clinic, Feb. 2, 1910.

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## CONICAL STUMP AFTER AMPUTATION IN CHILDHOOD.*

BY CHARLES A. POWERS, M.D., DENVER, COLO.

The patient is a girl of thirteen years whose left arm was amputated in its upper fourth by Dr. L. A. La Garde, of the United States Army, for congenital cavernous telangiectasis eighteen months ago. The condition for which the amputation was done extended from the fingers to the upper and middle thirds of the arm. Dr. La Garde kindly asked me to see the case in consultation with him; he exhibited the little patient at meetings of this society both before and after operation. The amputation stump was in all ways excellent, the flaps were ample, the bone well covered.

Those of you who were here when the patient was shown directly after the amputation may remember that the view was expressed that the bone would "grow down," that the stump would become conical and require bone resection. At this time you see that the prediction has been fulfilled; the stump is markedly conical, the bone presses against the skin, the skin is beginning to be adherent through this pressure. The stump is painful and a suitable amount of bone will be resected tomorrow.[1]

In previous papers[2] I have called attention to the practical certainty that when a little child suffers amputation through the upper part of the arm or the upper part of the leg a conical condition of the stump will result. I have never known this to fail. It occurs because the humerus and the bones of the leg develop in large part from their upper epiphyses. The growth takes place at the upper epiphysis and pushes the bone down into and through the soft parts. When the surgeon does his original operation it is best for him to tell the parents that this will probably take place.

The younger the child, the more frequently will the bone have to be cut off.

# Medical Progress.

## REPORT ON NEUROLOGY.

BY PHILIP COOMBS KNAPP, A.M., M.D.

[Concluded from No. 18, p. 696.]

### THE RÔLE OF EMOTION IN THE GENESIS OF NEUROPATHIC AND PSYCHOPATHIC CONDITIONS.

The Société de Neurologie and the Société de Psychiatrie devoted four sessions to the discussion of this problem[24] at the first annual reunion of the two societies last winter, dealing with the psychological, physiological, neurological and psychiatrical problems. Janet discussed the question on the psychological side. The reaction of the individual to any special circumstance may often be determined in advance by his constitution and education; in other cases, although the reaction is not organized in advance, there is a partial adaptation to the circumstance; in neither case does he consider that there is place for emotion. There are, however, circumstances for which the individual is not adapted by his previous organization, and to which he cannot adapt himself, although he perceives the circumstances and feels the necessity of reacting to them. In these cases, instead of the useful reaction, there are various disturbances of all the functions of the organism. To these disturbances, coming on under these conditions, he gives the name of "emotion." The disturbances are very complex. There are modifications of feeling, giving rise to fear, anger, shame, indignation, discouragement, despair, pain, or feelings of inadequacy, weakness, incapacity, indecision, etc. There are intellectual modifications, systematized agitations in the form of fears, obsessions and the like, or loss of memory and confusion. There are various disturbances of the visceral functions, boulimia, polydipsia, muscular spasm, vomiting, frequent micturition, incontinence or retention, sobbing, hiccough, cough, groans, laughter, palpitation, vasomotor constriction, increased secretions, anorexia, gastro-intestinal atony, choking, smothering, slow pulse, fainting, vasomotor dilatation, hemorrhages and suppression of secretions. There are also motor disturbances, either in the way of motor agitation or inhibition of necessary action. The entire condition may be regarded as a depression of psychological tension with insufficient adaptation and impotent efforts to remedy the condition. Emotional disturbances do not usually come on until after a latent period, and usually affect chiefly one special function. The exciting cause of the emotion may determine what special function shall be affected; the function which was active at the moment may be the one affected, or any function which was previously enfeebled may be affected. If the disturbance has taken a particular form after the first emotion, it may always take the same form after other emotions. The normal individual speedily adapts himself. If the emotion be intense, long-continued and frequently repeated, or if the individual be weak of will and of low psychological tension, the consequences become serious. Vogt, in the discussion, pointed out that the reaction, although inadequate, was not always useless; that an attack of hysterical sleep, for example, might preserve the nervous system from too great excitement. Emotion may lead to active disturbances, often of sudden onset and disappearance, and states of exhaustion, which develop and disappear slowly. Agreeable emotions, too, may excite neuropathic states. Ballet added that slow and long-continued emotions often gave rise to affective conditions. On the physiological side, Hallion showed that, as a rule, there was a definite relation between the intensity of the emotional shock and the reactions which follow. These reactions are often disordered, but, with moderate emotions, the excitement sometimes leads to a general nervous stimulation which aids the organism to adapt itself to the altered circumstances. Stronger

* Paper read and patient exhibited at a meeting of the Denver City and County Medical Society, Sept. 13, 1910.

[1] Three inches of bone were removed.

[2] New York Med. Rec., June 7, 1890. *Ibid.*, April 7, 1894. Ann. Surg., April, 1900.

[24] Rev. Neurol., xvii, 1551, Dec. 30, 1909.

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emotions lead to harmful disturbances, and stronger yet may have depressive effects. The will can modify the mental state somewhat, and thus affect the reactions, but when the reaction has once begun, the will can act only slowly by antagonizing the effect of the emotion, which increases the subsequent nervous exhaustion. The vasomotor disturbances of emotional origin may have a certain mechanical effect by giving rise to cerebral hemorrhage, but, apart from this, it is questionable if they can actually engender nervous affections.

Claude presented the neurological problems. At the basis of all neuropathic states there exists a constitutional modification of the nervous system, structural alterations or more or less deviate functional aptitudes which create a particular state of emotivity. Emotion itself is only an exciting cause, secondary to the constitutional state. Emotivity, often heredity, may also be acquired as a result of education, the manner of living and physical and moral conditions. It may be considered as the manner of perceiving and expressing emotions, and is modified greatly by the repetition of emotions. He raised the question whether a disturbance of emotivity is not a necessary condition which enables emotion to provoke neuropathic symptoms. Emotion does not create the epileptic state, but it often acts as the exciting cause of an epileptic attack or its equivalent, and sometimes as the exciting cause of the first attack. It does not create hysteria, but it may provoke the hysterical manifestation in a subject whose emotivity was previously disturbed and may produce many of the accidents of hysteria, such as convulsions, paralysis or contractures, apart from suggestion. Emotion can give rise to transitory depression in normal subjects and in others may engender various manifestations of neurasthenic states, but it is not probable that emotions, no matter how intense or how frequently repeated, can alone produce neurasthenia. Constitutional weakness and hereditary degeneracy are necessary factors. Emotion may excite choreiform conditions, or myoclonus, but it never causes Sydenham's chorea, although it may aggravate it. It also exaggerates tics, and may put the subject into a condition where tics may develop. Emotions may engender certain pathological states which consist of a permanent exaltation of emotivity and are manifested by reactions of the same sort as those which translate the emotion, but of which the subject is conscious. The most frequent symptoms of these states are sensory disturbances, tremor, asthenia, anxiety, depression and hallucination, and they are especially common in traumatic conditions. Dejerine believes that sudden emotion produces hysteria and gradual and continued emotions produce neurasthenia. Emotion is the most important, indeed, the sole factor in the genesis of both affections. Predisposition, however, seems necessary in all cases of hysteria and in the great majority of cases of neurasthenia. The various symptoms come on without any mental representation, without the subject's knowing how or why, and they are certainly not the result of suggestion. In the vast majority of cases careful inquiry will discover the predisposition. Sollier held that the same emotion could be followed by different effects in different subjects, the emotion permitting the emotivity to manifest itself according to the constitutional type. Janet felt that careful inquiry was necessary to determine a pre-existing emotivity and predisposition. Emotivity was a tendency to replace superior operations of adaptation, which had become impossible, by the exaggeration of inferior operations and especially by visceral agitations. Aboulia plays an essential part in emotivity. Bonnier maintained that many emotional reactions were of bulbar origin and believed that he had repeatedly modified them by the reflex action on the bulbar centers from cauterization of the trigeminal terminations in the nose. Crocq stated that in many cases the predisposition was not hereditary but acquired from bad hygiene, excesses, etc., and that in some cases, where there was no predisposition, a neurosis could be produced simply by nervous shock, which was denied by Dejerine and Sollier, but supported by Ballet and Babinski. Dejerine and Dupré both urged that, if emotion could cause neuroses without predisposition, all persons subjected to emotions would suffer alike, which is not the case. Roubinovitch had studied 126 cases of epilepsy, in 20 of which emotion seemed to have acted as an exciting cause, but on further inquiry the emotion was found to be only of secondary importance. Dejerine had seen two cases in which emotion had produced the first epileptic seizure, but he believed that a special predisposition was essential. Janet thought that emotion often provoked attacks in epileptics and that sometimes it determined troubles which in their further course might lead to epilepsy, or it might modify pre-existing neuroses and transform them into epilepsy. Dufour denied that emotion could produce epilepsy in a person without predisposition, which is sometimes manifested by convulsions in infancy. In discussing the relation of emotion to hysteria it was decided to limit the discussion to hysterical crises, paralyses and anesthesias. Dejerine cited cases to prove that an hysterical crisis may develop spontaneously without any previous suggestion, and added that emotion might sometimes cure hysteria. Sollier thought that emotion never created hysteria, but that it was one of the chief factors in exciting hysterical accidents, most of which are merely phenomena produced by emotion. Babinski admitted that emotion might be followed by constriction of the throat, vasomotor and secretory disturbances, tremor, tachycardia, loss of consciousness, outcries and gesticulations. It may even cause a true crisis in a person previously hysterical, but it cannot produce alone a typical hysterical attack, which is always due either to suggestion or to simulation. Such attacks are now rare, which would not be the case if they were due to emotion. Dejerine admits that the classical attacks that Charcot described are purely artificial. Claude called attention to the fact that a crisis might be produced in the first

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instance by emotion and later occur from other influences due to auto-suggestion. The crisis is an emotional reaction, and in an emotional state suggestion acts more readily. Janet could cite many cases where a crisis came on after an emotion, and where later other influences complicated the repetition, but the emotion was the original exciting cause. When a patient sees a crisis and imitates it, there may also be the emotion of fear. Sollier believed that various causes, emotion, suggestion, irritation, contagion and others besides might excite a crisis, which is merely the reaction of the nervous system against the inhibition which has struck it. Vogt maintained that even when there was suggestion, the emotional element associated with the suggestion determined the crisis, and stated that by psycho-analysis he had proved the emotional origin of various crises. In regard to other hysterical phenomena, there was a similar difference of opinion, Babinski contesting that all hysterical conditions were due to suggestion, Dejerine, Pitres, Janet and others insisting that the influence of suggestion was exaggerated. Babinski cited various instances where a large number of persons had been exposed to emotional strain without producing hysterical accidents, but, as Dejerine pointed out, the emotion was not sudden, but foreseen, and, as Janet showed, his data were derived from untrustworthy observations. Neurasthenia, according to Dejerine, is due solely to emotion; overwork, infection and intoxication do not cause it unless emotion be added. It develops only in the predisposed, but the predisposition varies greatly. With this Sollier agreed, but the emotion acts in consequence of the special pre-existing emotivity, which is the special factor, the emotion itself being merely an exciting cause. According to Dejerine, the neurasthenic is exceedingly suggestible, even more so than the hysterical, and is often cured by persuasion, yet the mental state is wholly different from that of hysteria. The hysterical is indifferent, the neurasthenic depressed, obsessed and concentrated on his troubles and exaggerating their importance. Sollier urged that emotion may inhibit functions, as in hysteria; or exhaust them, as in neurasthenia. For Dejerine, asthenia and fatigue are accessory in neurasthenia; there is always an emotional cause. Babinski had found an emotional traumatic neurosis, following the Messina earthquake, in which the symptoms were tachycardia, vasomotor disturbances, tremor, headache, pain, insomnia and anxiety, for which he suggested the name "emotional neurosis," the symptoms persisting for months. Dejerine and Claude both insisted upon the fact that traumatic neuroses did not develop except in the predisposed. After a study of 138 cases of chorea, Souques came to the conclusion that emotion, even occurring in neuropathic subjects, was incapable of producing the disease, which is caused by infection. Oddo, on the other hand, after a study of 150 cases, concluded that emotion was a frequent cause of aggravation, relapse or recurrence, especially in emotional children, and that profound emotion, in 10 cases, actually caused the first attack of the disease, a conclusion to which Crocq subscribed. In regard to tic, Meige held that while emotion could aggravate, it did not create it. Janet accepted this conclusion, but believed that emotion could make tic return after it had once disappeared, and could systematize a tic or alter its form; it could also cause a psychasthenic state in which tic might develop. Raymond maintained that emotion may profoundly affect the brain, disturbing the psychical, motor, sensory, vasomotor and thermal centers and causing reactions of the most varied sort. Against such shocks there is a certain power of inhibition which varies with age, sex, temperament, general health and the frequency of the shocks. Emotion may cause psychasthenia and hysteria without the intervention of suggestion or auto-suggestion in the predisposed, and depressing emotions are a common cause of neurasthenia.

The psychiatrical problems were presented by Dupré, who said that emotion gave rise to a psychical shock which determined effects of excitement, depression or functional deviation, varying with the intensity of the shock and the condition of the subject. The important factor is the constitutional emotivity characterized by exaggeration of the tendon, skin and pupillary reflexes, sensory hyperesthesia, unstable equilibrium of vasomotor and secretory reactions, tendency to spasms, the intensity and diffusion of the physical and psychical effects of the emotions, and insufficiency of motor inhibition, both reflex and voluntary. The pathological manifestations of this emotivity are in the domain of anxiety, under the form of obsessions, phobias and impulses. Dejerine accepted the idea of an emotional psychopathic constitution, but stated that some persons show many external manifestations of emotion, agitation, cries, tears, pallor, flushing, etc., while others show none, yet in the latter the effects may be much more serious. Janet added that the essential thing which caused pathological results from emotion was the impotence of the will, leading to impotent effort and emotional disturbances. Dupré and Régis, however, argued that the emotivity might appear very early, before the will was developed. In regard to obsessions and phobias, Janet believed that the crises, although often in relation with slight emotions, were due chiefly to impotence of the will. Emotions may give rise to periods of depression in which the crises were of much more frequent occurrence. Arnaud contested the idea that emotion was the cause of obsession. The obsession is primary, due to a consciousness of incapacity, and exists before the age when emotion is of much importance. Dupré also claimed that the emotional constitution was the basis of mania and melancholia, which was denied by Janet, who held that the alternations and periodicity of maniacal depressive insanity were not of emotional origin, although emotion might cause the anxious depression of psychasthenia. Babinski urged that emotion never produced maniacal depressive insanity, in which opinion all agreed, and Régis called attention to the influ-

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ence of abdominal intoxication as an important factor in the production of melancholia. Dupré, Claude and Janet also admitted that emotion in a number of cases may give rise to a confusional psychosis, which is often transitory, but may become chronic. Dupré also had found, on inquiry of many obstetricians, that emotions during pregnancy have no influence on the mental state of the child, but emotions in the parents at the time of conception do have a decided influence.

It seems clear, from the cases cited in the discussion, that emotion is an important factor in the genesis of various neuroses, such as psychasthenia, hysteria and neurasthenia, and also of some psychoses; that in many forms of nervous and mental disease it may act as an exciting cause, aggravate the condition or excite certain symptoms. Its action is not constant, it affects some persons and spares others, or affects a person at one time and not at another. The factor of predisposition is important, yet, as the discussion shows, it is not easy to prove the existence or nonexistence of predisposition. In many cases, too, emotion is only one of various factors which work together to produce the nervous disorder.

## Reports of Societies.

### THE AMERICAN CLIMATOLOGICAL ASSOCIATION.

WASHINGTON, D. C., MAY 3, 4 AND 5, 1910.

[Continued from No. 18, p. 701.]

DR. W. F. R. PHILLIPS, of Washington, read a paper on

NATURAL AND ARTIFICIAL OR HOUSE CLIMATES.

Dr. Phillips stated that the Association holds that there is something curative in climate and that climate itself is an entity capable of being beneficially used as such in the treatment of certain diseases in particular and, in a less degree, of diseases in general. He is convinced that this is based on facts that have been and can be experimentally demonstrated. Some confusion has arisen because of what different people understand climate to be. He takes Hann's definition of climate as the "sum total of the meteorological phenomena that characterize the average conditions of the atmosphere at any one place on the earth's surface." This includes physical as well as chemical attributes of the atmosphere. There is a tendency to consider that climate is necessarily a natural product and that it can be in no wise an artificial one, — one due to man's direct or indirect activities. Artificial climates are the average atmospheric conditions of our buildings of all kinds, our habitations, our factories, schools, theaters, assembly halls, etc., and the assembling of such into villages, towns and cities and all other natural environments rendered abnormal or artificial by us as the result of man's activities. Indoor atmosphere was contrasted with outdoor atmosphere. Conditions in New England in winter were described. We have certain average conditions of the atmosphere in our houses that are deserving of being called climates and that these climates are largely postulated by our outdoor atmospheric environment or climate. Our whole problem of heating and ventilation is a struggle at adaptation to climate. When we send our consumptive patient out of the city to the country, mountain or plain, seashore or sanatorium, from the casement of a tenement to its roof, or from an area room to the fire escape, we are again recognizing climate. We need more laboratory experimentation to fix these values.

DR. J. O. ROE, of Rochester, N. Y., read a paper on

WHY WE TAKE COLD.

The theory of mechanical congestion of the internal organs by the action of cold on the surface of the body is entirely inadequate because we all know that this form of congestion does not lead to true inflammatory action, since, in an attack of acute coryza, the Schneiderian membrane is so near the surface of the body that the blood should be driven away from it by cold and not into it.

Dr. Roe said that coryza or cold in the head is in fact simply a manifestation of disturbance of the vasomotor centers which is caused by a toxic condition due to uneliminated débris of unassimilated or effete products, which is very commonly termed "lithemia." The toxic effect of the lithemic product on the sympathetic nerve ganglia produces a contraction of the arterioles throughout the body and, consequently, an increased blood pressure. Since, then, the capillaries of the mucous membrane throughout the body receive less support on account of its great vascularity than the capillaries of other parts, they give way under the increased blood pressure with the resulting mucous fluxes from the various surfaces. When the mucous flux, which is nature's method of relieving the engorgement, has accomplished its purpose and the toxins have had time to become eliminated by the necessary fasting, and when the restoration of the cutaneous circulation has taken place, then these overdistended capillaries return to their normal caliber, the discharge ceases and the cold or coryza is cured. Dr. Roe acknowledged the rôle of chilling of the body, improper protection, exposure to drafts, damp air, etc., but he considers colds usually due to a depressed condition of the system, a disturbed equilibrium of the vascular system, diminishing the resistance of the system to external changes, whereas such exposure would have no effect if the subject were in a normal condition. Four special germs are held responsible. The bacillus of Friedländer seems to be nearly always the exciting cause of a nasal cold; in the throat and fauces, the bacillus septus; while in the larynx and bronchi, the micrococcus catarrhalis and the micrococcus paratetragenosus seem to be responsible for the cough and bronchial irritation. The use of autogenous vaccines according to the method of R. W. Allen, of London, was advised. Dr. Roe showed the danger of repeated colds.

DR. HUGH M. KINGHORN, of Saranac Lake, read a paper on

THE EMPLOYMENT OF COLD IN THE TREATMENT OF PULMONARY TUBERCULOSIS.

Dr. Kinghorn does not regard the tuberculin treatment such as to be regarded as the basis of treatment in pulmonary tuberculosis. At present the dietetic-hygienic or fresh-air treatment is the only one of established value. He gave Brehmer and Dettweiler credit for overcoming the prejudice against cold air. Following these came Loomis and Trudeau in the Adirondacks. Hypernutrition is the factor of first importance, and cold air helps to bring it about. Patients in his experience do best in cold weather. It is a popular saying in the Adirondacks that one winter

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is worth two summers. The treatment should begin at the same time that the diagnosis is made, and should be carried out rigidly. He stated his belief that the patient should at this time be carefully cautioned against settling up his business affairs before he leaves for the health resort or before he begins treatment. He is now suffering from symptoms of his disease, and this perhaps the most critical time of the whole illness. Many cases are irreparably lost at this time because they try to settle their affairs. This extra tension and anxiety may bring on a hemorrhage, or fever, and either of these may alter a good incipient case to an advanced or acute case within a short time. The patient should, therefore, be put at rest and his arrangements should be made by friends. Nourishment and air are therapeutically on a par. The patient should, if possible, spend his entire life in the open air. He derives benefit from cold air not only when the weather is sunny and dry, but also when it is cloudy and damp and when there is wind and rain. Kinghorn believes that there is no basis for the assertion that cloudy and rainy weather are injurious. Snow and rain should not interfere with the cure, proper shelter being provided. Even a moderate degree of fog is not harmful unless it is saturated with coal dust, as in cities. The temperature of the air is not a factor of such great importance as was once supposed. But he acknowledges that thin-blooded and weak patients feel better in warm climates. Rapid changes of temperature should be guarded against. Dr. Kinghorn discussed the question of clothing and cautioned against producing sweating by too heavy clothing, chest protectors, etc. He advocated a process of hardening by using at the outset a sponge of the chest, arms and back in the morning with cold water. For most patients it is not advisable at first to take a cold tub bath each morning, but to stand and sponge from a basin of cold water. He should then rub dry quickly with a coarse towel. At night the legs should be sprayed. Later on, when the patient is strong, a morning tub may be substituted for the sponging. Breathing exercises were also advised, but these are dangerous while there is sputum.

Dr. Charles L. Minor, of Asheville, N. C., read a paper on

THE EFFECTS OF HEAT AND COLD IN PULMONARY TUBERCULOSIS.

Dr. Minor showed that empiricism precedes scientifically demonstrated principles in therapeutics, and it is easier to record impressions than scientific truths. He instanced the use of cinchona bark by the ignorant Peruvian Indians. He hoped that some day, as a result of the work of meteorologists and climatologists, we shall be able to accurately determine why cold or warm air has the effect on pulmonary invalids which years of experience have shown them to possess. Cold weather has a beneficial influence on pulmonary tuberculosis as compared with hot weather. Dr. Minor referred to the former popularity of southern Italy, Madeira and Mediterranean ports for the consumptive. That body temperature is reduced by cold weather all who have followed the temperature curves of cases of tuberculosis know, and Birch had demonstrated that in India the human body temperatures range distinctly higher than in England; while Brown-Séquard made similar observations on a journey from Mauritius to France. Hot climates are dangerous in all cases attended with high heat production, and this includes tuberculosis. It is a matter of common experience, corroborated by scientific observation, that cold weather, if not too extreme, when it can be depressing, tends to do certain things for the body which chance to be just those which we have found favorable in tuberculosis. It raises appetite, assimilation, oxygen absorption, weight, vigor, resisting power and blood pressure; while it lessens pulse-rate, breath-rate, temperature and decreases skin activity. Of course there are many degrees of cold, and it is hard to say which is the most desirable.

Patients, however, with constitutionally low vitality, especially the aged, require warmer climates; so also patients with the more severe forms of kidney trouble. Chronic rheumatism in a tuberculous patient is an indication for a warmer climate. Bronchitis and laryngitis also require it in some cases.. The essence of the difference between hot and cold weather in their effects upon tuberculosis is that the one is a sedative, the other a tonic and stimulant.

Dr. Charles Fox Gardiner read a paper on

THE THERAPEUTICS OF COLD IN COLORADO.

After sketching the history of the cold-air treatment of tuberculosis and its gradual rise in favor as the method of treating the disease, Dr. Gardiner said that in Colorado they had an exceptional opportunity to compare the effects of warm and cold air. The difference between summer and winter, apart from the actual temperature, is not, perhaps, as marked as in many other health resorts. During both seasons in Colorado, dampness of atmosphere and soil are more nearly the same. There is little snowfall in the average winter, and rarely large areas of snow melting into slush. It almost never rains in winter. Watering carts are used to lay dust during the entire year in several of the cities in Colorado. There are few muggy days, and never any exhausting heat. Both Dr. Solly and the author had patients sleeping out of doors as early as 1884 and before. The colder temperature of winter has several advantages in the treatment of tuberculosis over the warmer air of summer.

Dr. Gardiner states that he has found direct sunlight of much benefit to his patients, provided the weather was cold and they had proper protection for the head, the eyes being shaded from all glare. Cold stimulates the appetite. The temperature of patients in a heated term tends to be higher. Pulmonary hemorrhages are probably more liable to occur in winter; night-sweats in summer. Invalids are generally impressed with the benefit derived from winter weather. The geographical distribution of phthisis shows the benefit derived in tuberculosis by individuals living in dry, cold, elevated regions; also that all races have a more rapid and pernicious form of tuberculosis in damp, warm regions.

DISCUSSION OF PAPERS OF DRS. KINGHORN, ROE, MINOR, GARDINER AND PHILLIPS.

Dr. J. Hilgard Tyndale, of Lincoln, Neb.: I understood Dr. Kinghorn to say that vaccine therapy has not risen to the dignity of being universally accepted. If cold air (hygienic) treatment be the accepted method, is it not a fact that more or less permanent arrest by cold-air treatment is mere self-immunization; that is, that it strengthens the defensive powers in the same way that the use of tuberculin does; that, therefore, the use of tuberculin is surely a method to be pursued, at least to be tried, always suited to the individual case. If it is found suitable, then it is to be pursued at the dosage which suits the individual, or if found unsuitable, then to drop it. If cold-air treatment is based on self-immunization, the same basis applies to the use of tuberculin. In my sanitarium in Lincoln, Neb., we use tuberculin in all suitable cases. Vaccine therapy is made obligatory under our laws for indigent state consumptives, as far as the equipment of the

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hospital is concerned, but the patient is in no wise compelled to submit to it.

DR. THOMAS W. HARVEY, of Orange, N. J.: Having progressed slowly in the treatment of pulmonary diseases by the use of cold air from tuberculosis to pneumonia and then on to prolonged bronchitis, I have found that all cases of pulmonary trouble are improved by putting them into cold air. In other words, many of my cases of bronchitis, after they had got through the beginning of their illness, get more and more cold air, and I find that my patients with bronchitis and a lingering cough are improved by stopping my various cough medicines, hypophosphites and other things, and taking them outdoors, or putting them up in a bedroom window or in a room with a lot of windows open; even the little children three and five years old I find improve faster and lose their irritating cough with the treatment of cold air, so I have almost come to the conclusion that even the tuberculosis cases which have improved most by being outdoors are those with bronchitis.

DR. JAY PERKINS, of Providence, R. I.: We have heard so much, or the public has heard so much, of the cold-air treatment that it is being carried to extremes. You people in health resorts may not appreciate that as much as those of us who are outside. But I know that in our cities there are a great many people and physicians who are carrying the cold-air treatment to extremes, and to the extreme that they do not give their patients the treatment that Dr. Kinghorn has mentioned, and that is that the patient should be comfortable. Time and again I have seen patients who have slept out of doors and slept with their windows open by the direction of the physician in attendance, and they followed directions so conscientiously that they have suffered from the cold, and that extreme exposure has done them more harm than good. I never advise a patient to sleep out in winter; in the summer I do advise it. In reference to another thing which has just been mentioned. While I am a firm believer in the fresh-air treatment for bronchitis, I wish to differ a little.

Another thing to which I object is putting patients previously accustomed to warm rooms directly into the cold air of winter. As a result of this Dr. Perkins cited one patient who developed a bronchitis which she has been two years getting over. She left the sanitorium in a very bad condition, and went back home and lived under more reasonable conditions, and is gradually getting better.

DR. W. F. R. PHILLIPS, of Washington, D. C.: These papers have brought up some interesting nuts for us to crack. I do not propose to crack any of them myself, for I confess that they are too hard for my teeth. In Dr. Minor's paper he spoke of cold being a tonic, and cited an instance where anthrax bacilli were not infective when the temperature was lowered. I wondered whether he recalled also the fact that some animals immune to anthrax bacilli could be made susceptible to infection thereby by making them cold; if I recall correctly, the rat and the pigeon are absolutely immune to anthrax when at normal temperature. So here we have something that it would not do to base any very considerable deduction upon.

Another thing Dr. Minor attributed a tonic influence to, that is, he seemed to attribute in his paper some of the improvement noticed in the fresh-air treatment to the effect of cold weather, in increasing the excretion of the carbon dioxide, and to increasing oxygen assimilation; in other words, in metabolism, Dr. Kinghorn insisted that it was necessary in fever cases to keep them absolutely quiet to conserve the metabolism. Why is increased metabolism brought about by cold weather beneficial at one time and apparently increased metabolism by exercise not beneficial at another? So it seems to me that we have several things that are problems for us to consider, and if these papers have done nothing else, they have simply brought this to our attention.

While Dr. Roe was reading his paper and referred to the popular belief that drafts are the occasion of colds, I wondered how often we sat in drafts, got wet feet, and other things, and did not get cold; and whether it was not merely an incident in the catching of cold that when we got it we began to look back to see what we had done in the previous few days that was a little out of the ordinary and pick on that little thing as the real thing that gave us the cold.

DR. HUGH M. KINGHORN, of Saranac Lake, N. Y.: I am a great believer in the value of tuberculin treatment. In fact, I use it a great deal together with the cold-air treatment, but what I meant to say in my paper was this, that while tuberculin treatment is of considerable value in the hands of some physicians, that is, while they get good results from it, yet it is not the basis of the treatment of pulmonary tuberculosis. The fresh-air treatment is *the* treatment, and is the basis of treatment to-day for pulmonary tuberculosis. The tuberculin treatment is merely a help, but the fresh-air treatment is *the* treatment.

With regard to keeping the fevered patients at rest and increasing the metabolism, it is with a view to avoiding any exercise whatever. The quieter you can keep them, the better are your chances of reducing the fever.

DR. C. L. MINOR, of Asheville, N. C.: It is, of course, true that in the present state of our knowledge we can record only impressions on such a subject, though I trust that the work in meteorology of such men as Dr. Phillips will in fifty or one hundred years give us a working basis and make the subject capable of scientific analysis as it is not at present.

Now, as to the doctor's objection, I think he is in error, and he will find that in my paper I have said that extreme cold can be and often is depressing, though we all know by experience that moderate degrees of cold are tonic and bracing. Had Dr. Davaine run the temperature very much lower, Dr. Phillips would have found results in accordance with his ideas.

As to the question of the increase of metabolism when fever is raised, it is, of course, true that at such a time we wish by rest and other means to lessen metabolism as far as possible, as every added cause of oxidation in the body increases fever and its tissue waste; where, on the contrary, there is little or no fever, a rational increase of metabolism is beneficial and graduated exercise invaluable. I make this plain to my patients when explaining to them how to exercise by telling them that as long as their deposits in the bank of health are barely sufficient to meet the needs of their mere living, they cannot afford to weaken their credit in that bank by overdrafts as represented by exercise, but that when by rest, food and quiet they have built up their credit in the bank and have a surplus, then they can afford to spend part of that surplus for something more than the mere necessities of living.

As regards Dr. Kinghorn's paper, I would wish to refer to his discussion of the question of sleeping out. Every good therapeutic measure is apt at first to be overdone, and this is true, I believe, of sleeping out, which is now spoken of as a *sine qua non*. My view is that if every moment of time from breakfast until bedtime is spend outdoors, then the patient can safely and well afford to sleep in a room provided it has at

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least two and, better, three, windows, especially if he is still febrile and liable to setbacks. When, however, as is liable to be the case when the patient returns home, he must necessarily spend a good part of his time indoors, then I believe it is essential that he sleep out to square up the difference and to get at night the oxygen he has missed in the day.

Dr. James M. Anders, of Philadelphia, read a paper on

STREET DUST AS A FACTOR IN SPREADING DISEASE; METHODS OF REMOVAL.

He considered, first, the effects of the inhalation of non-infectious street dust and, second, street dust as a vehicle for conveying disease germs, or the influence of infective dust. Dr. Anders classified the various kinds of filth composing street dust, from the excrement of horses, dogs and human beings to soot, plaster and cement. Human expectoration received attention. All this contributes to the dust found in houses in our cities and towns. Nasopharyngeal irritation results, and we can trace to it frontal sinus disease, pharyngitis, tonsillitis, laryngitis, asthma and bronchitis, as well as conjunctivitis, pulmonary congestion and edema. Anthracosis was referred to. The dust caused by automobiles was noted. Dr. Gilman Thomson states that it is no exaggeration to state that nine tenths of the acute inhalation diseases and chronic catarrhal diseases are due chiefly and directly to dirt inhalation. The house fly is a carrier of contagion.

The street cleaning of cities should be entrusted to the Health Department and be conducted on scientific lines. The vacuum or pneumatic method as practiced in Berlin gives the best results. It raises no dust and is more complete. The use of crude oil on the streets, especially those paved with asphalt, is inadvisable. Sprinkling was advocated. Street cleaning should be done at night. Dr. Anders suggested that a committee of the American Climatological Association should be appointed to consider the subject from its hygienic and medical aspects, and to make a report at the next annual meeting. The legitimate scope of this committee should include an appeal to the mayors of all cities requesting them either to appoint special commission or to urge existing bureaus of health to study the problem with special reference to the good results already obtained elsewhere.

DISCUSSION

Dr. J. H. Elliott, of Toronto, Canada: Just a word regarding the use of oil on the streets. The city of Toronto two years ago began the use of oil on the macadam streets, and it will interest those who are here from cities where there are macadam streets to know that our city has adopted the use of oil on all the macadam streets, not only because it is more effectual, but because it is cheaper. It is cheaper to oil a macadam road than it is to water it.

Dr. I. H. Hance, of Lakewood, N. J.: Last year the streets of Lakewood were oiled very largely at a cost not much greater than water. In this connection there was one source of dust that was not mentioned in the paper. It is the handkerchief which is carried around by the ordinary individual; you do not come in contact with it in the street proper, but in the street car, and when some one sitting next to you on the street car pulls out a soiled handkerchief and shakes it out, you may be the victim of infection. I think it is a very serious factor in the spreading of contagion. It would almost seem as if one should get up a society for the use of clean handkerchiefs.

Dr. Thomas Darlington, of New York, N. Y.: There are one or two thoughts that occur to me. They are, first, in regard to smoke. I had the privilege of arresting 243 persons, prominent manufacturers, for smoke coming from their chimneys, and only obtained eight convictions.

In New York City the greater per cent of the dust in the street, about 90%, is due to horse travel, and that, of course, will be largely gotten rid of by means of more motors.

So far as the uncovered foods are concerned, last year I caused over 1,900 people to be arrested and obtained convictions for uncovered food, but there are just as many to-day as before. Making arrests in large cities does not stop the violation of the law.

So far as spitting is concerned, perhaps if the paper of Dr. Anders could be circulated it would do a great deal of good towards educating the people. Women do not spit very largely from the fact that they do not smoke. There was a time when it would have taken half of the people of New York to arrest the other half for spitting. It is a question of educating the people that spitting is not the thing to do. After all, it is the education of the public that is needed.

The question of the removal of dust is a very difficult thing, because many large cities are committed to certain plans and it is almost impossible to have the latest manufacture of any thing, particularly if it is patented; a patented article, as a rule, cannot be bought by the city. But I have very great hope in the future that we can have more education. The same thing is true about the farmer. If he believed that there were germs on his hands or on his pails which, transmitted to children, would cause their death, he would wash his hands, and he would wash his pails.

Dr. N. S. Davis, of Chicago, read a paper entitled

A NEGLECTED FOCUS OF TUBERCULOSIS.

He dealt with prison tuberculosis and stated that each prisoner who is set free with tuberculosis is sure to become a focus from which the disease will spread among his friends and neighbors; further, there is a strong liability that under these circumstances he will relapse into a criminal life. The mortality of prison tuberculosis is very high, about 60% according to Dr. Davis. Jails are commonly infected; ventilation is bad and the prisoners are in a very receptive state. Dr. Ransom's work at Clinton Prison, at Dannemora, N. Y., was quoted and commended. The experience of the farm at Huntsville, Texas, was given and the reduction of mortality at other prisons was noted. By improved methods of dealing with tuberculosis the mortality at Sing Sing, N. Y., was reduced to one fourth; at Auburn, to one ninth, and at Clinton it compares favorably with that at sanatoria where consumptives of all classes are received. In Texas all consumptive prisoners are sent to the farm at Huntsville, and during the first three years of its existence 180 cases were received; the mortality fell off one half.

Dr. Davis made a plea for laws requiring examination of every one arrested and detained in prison more than one or two days, and a re-examination as often as once in six months. Segregation was advocated and more attention to hygiene of the persons and cells of the prisoners. Outdoor treatment was advocated. Early trials were urged and prisoners in an advanced stage should not be pardoned, but cared for by the state.

DISCUSSION.

Dr. E. O. Otis, of Boston, Mass.: To the list of prison sanitariums which Dr. Davis mentions I would add one in Massachusetts. We have a special state

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sanitarium for prisoners at Rutland, to which tuberculous prisoners are transferred from the various penitentiaries of the state and treated under similar outdoor conditions as exist in a state sanitarium a short distance away.

DR. J. H. ELLIOTT, of Toronto, Canada: The paper brought up two very important points, the treatment of tuberculous prisoners and the care of prisoners to prevent them becoming infected while serving their sentences. These are two quite different problems and unfortunately the second, which is most important, the prevention of infection, is closely bound to our present jail system. I think that we all recognize that our present system of confinement in jail is one which makes a prisoner a confirmed criminal. But if we take our prisoners out of the jails in which they are confined, usually at manual labor, and move them out into the country on a farm, we shall not only make men of them, but will lessen this mortality due to infection in the prisons. Following the example of some of the cities and states in the United States, our provincial government in Ontario has bought a large farm where they have good water supply, beds of gravel and sand, deposits of rock, particularly limestone rock, and the prisoners are already being transported to this farm and are building roads and putting up buildings. I think we should do all we can to foster this in the different states and provinces, and in this way indirectly to some extent, and also very directly, we shall lessen this mortality.

DR. HENRY MARTYN BRACKEN, of Minneapolis, Minn.: The question of the care of prisoners of penitentiaries is rather a simple matter, but the proper care of those in the jails and workhouses is a difficult proposition. And this is true because the prisoners of penitentiaries, the larger institutions, are under the control of people rather outside of politics, while the jails and workhouses are often under the control of changing supervision, from a medical point of view, and even those who have charge of the medical end take little interest in the sanitary side of it. The transfer of tuberculosis patients to special sanatoria or farms is certainly most desirable, and, where it can be carried out in relation to the larger institutions, is most satisfactory. In Minnesota the proper care of those in the state institutions has been observed carefully for years. The same man, a resident of Stillwater, has been in charge, and I think it must be at least fifteen years ago that there was a division set aside for the care of tuberculosis patients, and they were given special work keeping them outside as far as possible. Special care was taken to disinfect their cells and destroy their clothing and bedding, and in the reconstruction of the new institution a special ward for the tuberculosis prisoners is being provided. The death-rate of that institution from tuberculosis went down very low, then it went up because of the importation of a lot of tubercular prisoners from outside of the state. Then the rate was again reduced. I simply want to emphasize the point that there is a difficulty in taking care of these individuals in the smaller institutions, and the society's attention should be directed to improve the local conditions.

DR. GUY HINSDALE, of Hot Springs, Va.: I read a paper on this subject before the society at our meeting in 1905 and gave an account of an inspection of the Eastern State Penitentiary of Philadelphia, where the segregation of prisoners in solitary confinement has been used for so long. That prison was subject to a very heavy mortality from tuberculosis amounting to two thirds of all deaths. After the report which I made to the Pennsylvania Society for the Prevention of Tuberculosis, and to the inspectors of the prison, it was very thoroughly overhauled and the cells disinfected, and special attention given to the tubercular prisoners by way of giving them better air and exercise and carrying out to some extent the outdoor cure. This resulted in great improvement in the mortality rate of that prison, and under Dr. W. D. Robinson, who was the prison physician for a great many years in Philadelphia, and Dr. W. W. Leach, the resident physician, the hygienic conditions of that prison were immensely improved. Dr. Robinson took the matter up so vigorously that it gave rise to some controversies, but his work is to be thoroughly commended.

It occurs to me that the practice of sending prisoners to the road on the chain gang which is common in our southern states is preferable to putting them in solitary confinement as they do in the Eastern State Penitentiary in Philadelphia.

DR. C. L. MINOR, Asheville, N. C.: One of the difficulties in meeting this problem which I would wish to dwell upon is that we are handling not merely the poor, but the criminal poor, and, in my experience, persons of this class prefer not merely to be dirty, but take a vicious pleasure in soiling and defacing their surroundings, so that you cannot get their co-operation in improving the sanitary condition of prisons. The negro in our Southern jails is very ignorant and very dirty, but rarely malicious, but the scum of Europe, such as Dr. Davis sees in Chicago, can be made to improve their ways only by superior force and by an amount of vigilance which it seems impossible to hope for while, as is the case, politicians run these institutions.

DR. N. S. DAVIS, of Chicago, Ill.: I do not feel pessimistic about it, but to reform jail management, the present method of the care of prisoners must be completely changed. If they are still to be put in small cells which cannot be properly ventilated and cleaned, which are unwholesome in every respect, it is almost impossible to accomplish anything, but I believe this will be changed. I hope that those present will agitate for the needed reforms.

DR. ARNOLD C. KLEBS presented a paper on

SURGICAL TUBERCULOSIS TREATED IN THE HIGH ALPS.

He described the method adopted by Dr. Rollier and Dr. Bernhard. Rollier recently reported on thirty-five patients treated by heliotherapy at high altitude. His experience includes nearly 150 cases of tuberculosis of various locations, exclusive of the lungs, treated by mountain sunlight with excellent results.

DR. ARTHUR K. STONE read a paper on

TUBERCULOUS PERITONITIS; A PLEA FOR THE TREATMENT OF PERITONEAL TUBERCULOSIS BY HYGIENIC RATHER THAN SURGICAL MEASURES.

This paper appeared in the JOURNAL, June 16, 1910.

DISCUSSION.

DR. E. O. OTIS, of Boston, Mass.: Last winter a child about ten years of age was referred to my service in the Tuberculosis Clinic of the Boston Dispensary with a diagnosis of peritoneal tuberculosis. The diagnosis seemed clear. The unusual thing was that the child seemed to be in perfect general condition with rosy cheeks, and apparently suffering no inconvenience. She was put under good hygienic conditions, kept out of doors, and as time went on the ascitic symptoms gradually disappeared and apparently the child was making a rapid recovery. I simply mention this as an instance corroborating what Dr. Stone said.

DR. C. L. MINOR, of Asheville, N. C.: In my practice up to a year or so ago I always advised operation in

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peritoneal tuberculosis, and usually have had very satisfactory results, so that I learned to feel a good deal of confidence in the operation. Recently I have had some cases in which I have tried a purely hygienic treatment and have gotten some very satisfatory results.

I believe the difficulty often is that as a good many of these cases have not done well after operation, the doctor feels that he cannot advocate so serious a step. But I believe we owe it to our patients to give them the chance, and that we have enough records of good results by surgery to feel that, after giving medicinal measures a fair trial, we are fully justified in calling in a surgeon, since the danger should not be great and the likelihood of improving the outcome seems to be fair. The operation which I refer to has been a simple opening of the abdomen, an examination of the condition of the parts, which were usually studded with many tubercles, and then sewing up the wound without the use of irrigation, chemicals, etc.

Dr. Elliott: There are two questions on which I would like to have information. First, should we, because of the intestines being involved, give a diet other than that we would ordinarily give in a case where fever and tuberculosis are present?

The other question is while the surgical treatment is acknowledged to have been successfully employed in the wet cases, have we any figures to show us whether the operation is effectual or harmful in the dry cases? I think there is a general belief that in the dry cases surgical interference is harmful.

Dr. Stone: It seems to me that the mere operation of opening and sewing up again is simply the idea of doing something, something that you do not do in the lung cases you are attending, and your lung cases, taken in time, get well. In the abdominal cases you have the idea along with the surgeon that if you do something you cure your patients. We all see our lung cases go along without marked change for a long time and then change quite suddenly for the better, and in some of the abdominal cases that I followed out, patients who were sent home to die, went home and improved; one took up Christian Science and in three weeks was around and down at the beach. Still another went up into a back county of New York and had a physician who gave a pill and the patient immediately got well. And so it has gone in that way.

I do not feel that an operation is altogether a perfectly simple thing. I find that one third of the cases in Massachusetts had ulcers in the wounds afterward. I found in literature that there were cases where bad accidents occurred, as rupture of the intestines.

How long to wait? That is a question that Dr. Gelpke has considered quite extensively, and he states that he would not remove fluid under six weeks, but just more than that I could not state.

Dr. Will H. Swan, of Colorado Springs, Colo.: I think this paper is a very timely one and one of very great value because I think we should not take the position to which all of us have been inclined that tubercular peritonitis is necessarily a surgical disease. At the same time I think there are a certain number of cases where there are symptoms of abdominal pain, digestive disturbances that go on for considerable time, and by and by we get an attack of what is pretty definitely appendicitis, and with operation patients get well of that attack, and they are very much better and many of them relieved of their abdominal symptoms from that time on, and do very much better with the tuberculosis which may be coincident. I believe in many of these cases we have a vague indistinct chronic appendicitis that we have not been able to recognize up to a rather more definite attack to call attention to it. We have had it upon a number of times. I have in mind now two or three cases where I have been trying to get the consent to operate for what I suspect to be occurring, that is, chronic appendicitis, where there has been not marked but vague abdominal symptoms. If the patient is not doing very well, and no apparent reason for it, I wonder if an operation and the removing of the appendix might not be fitting. In regard to diet, I think there is no special change that should be considered, for in these particular cases that I have been trying to discuss, those with the general involvement of the peritoneum, the intestines are not involved. Hemmeter, in 56 autopsies upon patients dying of intestinal tuberculosis, found that in none of them was the peritoneum involved, and in several cases which I have seen where the peritoneum became involved by way of the intestine, it was evidently the colon peritonitis that developed and not a tuberculous one. I cannot state exactly in regard to prognosis of the dry cases as compared with the wet ones where there has been operative interference. I noted that in the Massachusetts General Hospital, on looking up this series of cases, the dry cases, operative and non-operative, gave a better source of statistics than the wet ones as to the permanency of cure. This is at variance with most observers.

We must consider that a certain number of these dry cases probably were wet at some time, and that a certain amount of effusion often occurs, and the patients do not record it. I find that in the history a number of times that patients have stated that their bellies have been swollen at some time, but when they came under the observation of the hospital and the doctor, the abdominal cavity was perfectly dry.

May 4, 1910. Afternoon Session at 2:30 p.m.

Joint session with the Climatological and Otological societies at the New Willard Hotel. General topic for discussion: "Vaccine Therapy."

According to an arrangement suggested by the Executive Committee of the Congress, the Climatological Association invited the Laryngological and Otological Associations to hold a combined meeting on May 4, at which the subject of Vaccine Therapy should be discussed from the standpoint of these three associations. Accordingly the following members prepared papers and took part in the discussion:

American Otological Society: Dr. B. Alexander Randall, Philadelphia, Pa.; Dr. Henry O. Reik, Baltimore, Md.

American Laryngological Association: Dr. J. W. Gleitsmann, New York City; Dr. H. S. Birkett, Montreal, Canada; Dr. F. C. Cobb, Boston, Mass.; Dr. C. G. Coakley, New York City.

American Climatological Association: Dr. Jas. Alexander Miller, New York City; Dr. Herbert M. King, Liberty, N. Y.; Dr. Walter A. Griffin, Sharon, Mass.

*(To be continued.)*

## Book Reviews.

*Clinical Commentaries Deduced from the Morphology of the Human Body.* By Prof. Achille de Giovanni. Translated from the second Italian edition by John Joseph Eyre, M.R.C.P., L.R.C.S.I., D.P.H. Cambridge. New York: Rebman Company. 1910.

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This volume, dedicated to Charcot, presents the results of the author's critical studies in anthropometry and his exposition of the theory, more familiarly associated with the name of Bertillon, of human individuality based on and determined by measurements. Generalizing from this, De Giovanni undertakes to bridge the gap between morphology and pathogenesis by deducing from his anthropometric observations certain "combinations," types or categories, each characterized by peculiar pathologic susceptibilities. These types, which amount to little more than a rehabilitation of the old diatheses on morphologic instead of empiric grounds, represent classes to which individuals may by their measurements be conveniently referred. This ingenious theorem seems rather a curious example of Latin rationalism than a contribution of particular value to clinical medicine.

*Physical Examination and Diagnostic Anatomy.* By CHARLES B. SLADE, M.D., Instructor in Physical Diagnosis, University and Bellevue Hospital Medical College, New York. 12mo. Pp. 146. Illustrated. Philadelphia and London: W. B. Saunders Company. 1910.

A small, succinct and well-arranged book on any subject in medicine is welcome in these days of somewhat ponderous treatises. In this volume of 146 pages, including a full index, is contained the fundamental methods and principles of physical examination, well illustrated largely by line drawings. As an outline of a large subject the book is to be strongly commended. It aims to be practical and makes merely the modest claim of being a preparation for more comprehensive works. It is admirably printed, with a judicious use of italics and heavy-faced type for paragraph headings.

*Chemical and Microscopical Diagnosis.* By FRANCIS CARTER WOOD, M.D. Second edition. New York and London: D. Appleton & Co. 1909.

The work is divided in nine parts, as follows: Blood, gastric contents, feces, parasites, oral and nasal secretions, sputum, urine, exudates and transudates and milk. It will be seen at a glance that all the branches of clinical laboratory technic are covered in such a category, and careful scrutiny of the various chapters will disclose them to be as complete as is necessary for use by student, teacher or practitioner. Schmidt's method for the examination of intestinal contents is a useful addition to an American textbook. The progress of medical research requires especial notice to be taken of the Wassermann reaction, the opsonic index and the tuberculin reaction. This new edition maintains the high reputation achieved by the book in its original form. It is scientific, yet eminently practical, and a credit to American medicine. In fact, no better work on laboratory diagnosis has been published in any language. The text is illustrated by many excellent colored plates, photographs and drawings.

*The Harvey Lectures.* Delivered under the auspices of the Harvey Society of New York, 1908–09. By Professors A. CALMETTE, W. G. MACCALLUM, GRAHAM LUSK, W. FALTA, M. J. ROSENAU, A. B. MACALLUM, J. B. LEATHES, PHILIP HANSON HISS, JR., and Doctors JOHN F. ANDERSON and C. B. DAVENPORT. Philadelphia and London: J. B. Lippincott Company. 1910.

Few American scientific publications comprise within so small compass the names of so many distinguished authorities as those of the Harvey Society. This fourth series of lectures, as the editor suggests in his preface, furnishes "a striking example of the many points of contact between medicine and the collateral sciences." Probably the subjects most likely to attract general interest are "Intestinal Infection and Immunity in Tuberculosis," "Fever," "Anaphylaxis," "Problems in Immunity," and "Heredity in Man." Though their treatment is in no sense popular, these and the other essays which compose the volume should appeal not only to physicians, but to other intelligent readers, for they deal with scientific problems of actual importance in the human life of the day.

*Hand-Book of Electro-Therapeutics.* By WILLIAM JAMES DUGAN, M.D. With 91 illustrations. Philadelphia: F. A. Davis Company. 1910.

Treatment by some form of electricity has been, and promises long still to be, one of the strongest trump-cards of the medical charlatan. The present volume undertakes to describe the legitimate uses of electricity in medicine, the methods of its application and the indications and contraindications of its employment. It is clearly written and well illustrated and should prove a valuable manual of a department of therapeutics little understood or utilized by the average physician. For the therapeutic and diagnostic uses of the x-ray, the reader is referred to special treatises on that subject.

*Chirurgische Operationslehre für Studierende und Aerzte.* Von Prof. Dr. FRIEDRICH PELS-LEUSDEN, Oberarzt der chirurgischen Universitätsklinik und Leiter der chirurgischen Universitätspoliklinik an der Königlichen Charite zu Berlin. Mit 668 Abbildungen. Berlin and Vienna: Urban & Schwarzenberg. 1910.

This well-printed volume of seven hundred and twenty-eight pages appears without a binding, undoubtedly a mistake for a book which is aimed to find a circulation in this country. Moreover, it is uncut, and so doubly unapproachable. The volume has many extremely good points. It deals with surgical therapeutics only and is brilliantly illustrated with most informing diagrammatic cuts. Excellent operations are chosen for description, and are related with the usual German dreariness. Nevertheless the book is so admirable a compendium of the best modern practice that we doubt not it will find a place in all reference libraries.

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THE BOSTON

# Medical and Surgical Journal.

THURSDAY, NOVEMBER 10, 1910

*A Journal of Medicine, Surgery and Allied Sciences, published at Boston, weekly, by the undersigned.*

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## SOME BIOLOGIC ASPECTS OF CANCER.

From *Biometrika*, "a journal for the statistical study of biologic problems," we have received an interesting reprint of "a statistical study in cancer death-rates" by G. D. Maynard, F.R.C.S.E., of Pretoria. At a time when the increasing death-rate from cancer in our own country and among other civilized nations is becoming matter of so much medical moment, such a study is of particular value. Dr. Maynard presents a very extensive and profoundly mathematical investigation of the relations between cancer and a large number of attendant conditions, such as race, age, sex, occupation, climate, social status and other diseases, notable diabetes and insanity.

His work is based principally on statistics from the United States, but includes also figures from other countries. His conclusions are striking and deserve serious consideration. He finds that his statistics give no support to the suggestion that cancer is of infectious origin. He finds that correlations exist between cancer, diabetes and insanity, and believes that these are not fortuitous. He suggests that "conditions of modern life, acting on physiologically unsound material, may account for the correlations between these three diseases, as well as for their increasing rates." The remedy for this condition he finds in eugenics.

In other words, Dr. Maynard regards cancer as a disease of the unfit, and includes diabetes and insanity in the same category. True, all are in a sense cellular perversions, morphologic or functional. Yet the prospect in face of this grim trilogy is perhaps not so gloomy as might appear. For the question rises whether a person has cancer because he is unfit, or becomes unfit because he has cancer. If the former, then the situation is fatalistic enough; but if the latter, there is at least a reasonable prospect that if we could but rid him of his cancer he would again become as fit as the man who has successfully recovered from yellow fever, or a hare lip, or a broken leg, or appendicitis. At a time when the laboratory study of cancer seems to offer such high hopes that we may be able ultimately to solve its riddle, such conclusions as Dr. Maynard's should in no sense act as a deterrent from its further pursuit. Cancer well deserves its name "malignant," but, far from being considered a biologic stigma, should for the present certainly be regarded as a definite extraneous scourge to be grappled with and conquered by more tangible means than eugenics.

## THE HOSPITAL SCHOOL FOR TUBERCULOUS CHILDREN AT FRANKLIN PARK.

MR. PRICE, secretary of the board of the Consumptives' Hospital trustees, in the daily papers has defended the action of the majority of the board of the trustees (Messrs. McSweeney, O'Brien, Price and Mrs. O'Callahan), as the Boston *Journal* says, in voting to close the Hospital School at Franklin Park. The defense practically amounted to saying that as only a few children were being cared for, and as there were many more who probably had tuberculosis that could not be cared for, therefore this form of hospital work should cease. But this argument, carried out to its logical conclusion, would stop all the work of other departments of the tuberculosis hospital and put an end, if applied, to every form of hospital philanthropy, for never can we have provision made for all the sick of the city. The other argument, that the children, being school children, should not be fed, is also entirely beside the point. The children were tuberculous children needing care and were sent to this department of the hospital. Here they were allowed to attend school a part of the day as a therapeutic measure, and, as another part of the cure, were properly fed and kept in the open air. They were patients in a hospital, not scholars in a school.

The care of persons having tuberculosis in "day camps," whence they return to their homes at night, is a well-recognized method of arresting the progress of tuberculosis. Dr. Floyd, physician to out-patients at the Consumptives' Hospital, has had much experience in the conduct, since 1906, of such a "day-camp" at the House of the Good Samaritan. The statistics of his work

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there in a period of several years will compare favorably with those of the average sanatorium. In all "day-camps," rest, fresh air, and good food, supervision in the homes, are the methods used to bring about favorable results. Patients with any form of tuberculosis must be fed, and among them, children, as well as any other unfortunates.

Physicians and interested laymen as well should hold these following simple facts regarding the Hospital School in mind. The Boston Association for the Relief and Control of Tuberculosis conducted a "day-camp" for tuberculous children during the summer of 1908. This was successful, and at the beginning of the school year the school board consented to furnish a teacher, who held a "district school" at the "camp." In this way the parents were persuaded to allow their improved but still really tuberculous children to continue in their outdoor life, for parents and children alike believe that school should be attended at all costs if the child is not distinctly sick. Later in the year the "camp" with the school attachment was moved, thanks to the Park Commission, to the roof of the refectory building at Franklin Park. These children, under the care of the physicians of the association, with the help of the teachers to maintain order and give employment to their busy brains, and the help of the nurse who followed them to their homes, and all under the wise direction of Miss Isabel Hyams, did exceedingly well, and at the end of the school year the experiment was pronounced by all who investigated or were connected with it as a success.

During the summer of 1909, some of the children went to the new land of the association, called Prendergast Camp, where they were looked after by a young man as teacher, taught in gardening and other nature studies, and amused, fed and kept in the open. Later the board of trustees of the Consumptives' Hospital voted to take over this work and thus to establish a department for children at the same place in Franklin Park. Provision was made for the care of one hundred children.

The board of trustees of the Boston Consumptives' Hospital had decided to build suitable hospital wards for the care of really advanced cases of tuberculosis. Plans had been drawn and the buildings were in the process of erection. An out-patient or dispensary department had been started, by means of which, and the co-operation of other hospitals in the city, it was hoped that a large amount of definite knowledge regarding the distribution of tuberculosis in the city of Boston would be acquired. A "day-camp" for adults which had been successfully conducted by the association was taken over. This was in the very beginning, and a number of patients were temporarily cared for while hospital accommodations were being prepared. This form of the hospital work will probably decrease in amount, though it will and should always have a place in the workings of a hospital department for the control of tuberculosis. The plans for the care of the adult case having been developed and slowly approaching completion, it seemed wise to take the next step and see what could be accomplished for the children.

As yet the world has done but little for the child with pulmonary tuberculosis. Unless the child is very sick or confined in bed it is hard to convince parents, teachers and even intelligent lay workers and some physicians that the child is dangerously ill. The public has not yet arrived at the place in its education in tuberculosis where it would recognize the need of placing such a child in a hospital even if there were such a place provided to send him. Such a children's department of a hospital as ours in Boston for the care of tuberculous patients should be provided. The school committee will have to co-operate in order that the best methods that we know of for enforcing rest and order can be carried out. Even after a children's ward has been built, there will always be a number of children who can best be cared for by the camp plan, the child thus remaining with the parents and becoming a constant source of hygienic information to the family, — an educational factor of great importance. The best way in which education of the community can be advanced will be along the line of the Boston hospital school. Here the children who are found by the school physicians and others to be definitely tuberculous, even when they are not so to be recognized by the laity, can be sent and put under the charge of competent physicians and nurses and given, with proper food and clothing, the best possible chance for their recovery. To accomplish this, the school side, which is really a therapeutic measure, will have to be emphasized and put to the front, because it is the school that the parent recognizes, while the real object is to get the child under hospital treatment. It is distinctly a hospital problem, not a school problem.

The questions at issue regarding the hospital school have been much obscured by the fact that it has been called an "open-air school," while the other fact, that was perfectly obvious to all the founders of the plan, that it was a method of caring

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for tuberculous children, has been forgotten or disregarded. It is perfectly true that applications of methods used in this hospital school can be adapted to general school work for *non*-tuberculous children. But all the conclusions thus far have been based on the work done for the arrest of real tuberculous processes in the children that have been under the charge of the hospital trustees. That the trustees of the Consumptives' Hospital do not see their way to provide for all the children whom the physicians in the city send to them is no more reason for closing their hospital school than for closing the rest of their hospital because they have not beds for all the tuberculous patients of Boston. Let them do what they can, run their hospital school to the limit of its capacity, and not make preparations to close it at the end of the present fiscal year.

## THE ECONOMIC COST OF DISEASES.

The concept of disease as a form of economic waste, though not exactly new, is rather likely to appeal to a good many Americans as a motive for efforts at its prevention. It is significant that, at a meeting of the Boston Chamber of Commerce last week, this aspect of disease was taken under special consideration, and reports on various topics of the question were presented by members of the Chamber of Commerce committee on public health and preventive medicine. Dr. Richard C. Cabot, the chairman of this committee, presented some figures representing the estimated pecuniary cost of the incidental ailments of life to the people of our community. There are in Boston approximately 150,000 wage-earners, receiving an average wage of $700 a year. If each of them loses twelve days, or two working weeks, a year from sickness, that loss represents to each of them $28, or a total of $4,200,000, besides a loss of 6,000 years of time. Moreover, the experience of certain large corporations has demonstrated that it actually pays in dollars and cents for the owners of mills, factories and workshops to make some provision for caring for the health of their employees. This may be done in various ways: by the employment of a graduate nurse as resident in such buildings, to supervise the hygiene and habits of employees, and by the establishment of "shop clinics" administered by properly qualified and paid physicians.

Propositions of this sort were presented and discussed at the meeting of the Chamber of Commerce by Dr. Cabot, Dr. L. R. G. Crandon, Dr. Horace D. Arnold and Mr. Stanley King. No definite action was taken, but it was evident that many of the ideas suggested were novel and appealed strongly to those present. The progress of preventive medicine is slow, when its motives are purely humanitarian; it will become more rapid when it is recognized by large classes in our society as the best means towards health as a business asset.

## INCREASE OF BIRTHS IN FRANCE.

Official report from Paris states that during the first six months of the year 1910 the births in France exceeded the deaths by 21,189. This information has excited great satisfaction in France, where it is regarded as evidence of the cessation of the menacing decline in population with which that country is confronted.

At first glance the figures seem impressive, but as a matter of fact they probably represent only a temporary fluctuation, a gain that is trivial in itself and likely soon to be more than counterbalanced. Moreover, no adequate reason is assignable for such increase, since it is too soon for the taxation of bachelors and the provision of increased salary for government employees to have affected the birth-rate. Meantime the rate in Germany continues at 36 per thousand, in Austria 37, and in Hungary 40. It is to be feared that in France there is no immediate prospect of any such fecundity as is shown by her Teutonic and Magyar neighbors. Her brief increase is transitory and fallacious.

## NEW THERAPEUTIC USE OF FORMALIN.

In the August number of the *American Journal of Orthopedic Surgery* is an article by Dr. Roland O. Meisenbach, of Buffalo, N. Y., presenting the results of some interesting and delicate animal experimentation performed with a view to determining the effects of chemical and mechanical stimulation upon bone-growth. A series of injections of various irritating substances was made in the region of the upper epiphyseal line of the tibia in young rabbits. The lesions thus formed were then studied by x-ray and microscope at varying intervals of time, with the result that the stimulated bone was found to ossify more rapidly than normal bone. Mechanical stimulation appeared to affect chiefly perichondral bone-formation, whereas chemical stimulation affected chiefly endochondral bone-formation. Of all the substances experimentally employed for injection, formalin proved most satisfactory, since it com-

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bines the effects of mechanical and of chemical stimulation, causing the "formation of osteogenetic tissue by influencing the zones of provisional calcification and calcified matrix, and by increasing the number of osteoblasts derived from the perichondrium." The author believes that his observations suggest a possible new therapeutic use of formalin by injection to stimulate bone-growth in congenital shortening of a limb, in infantile paralysis, bone-tuberculosis, osteomyelitis, obstinate non-union of fractures. If verified by clinical application, the results of his admirable piece of research seem likely to be the suggestion of a new therapeutic procedure that may prove of great value in general as well as in orthopedic surgery.

## MEDICAL NOTES.

A Centenarian. — Mrs. Hela Hurd Cook' who died last week at Clayton, N. Y., was locally reputed to have been born in 1808. Her father fought in the American Revolutionary War.

The Harben Lectures. — The Harben Lectures of the Royal Institute of Public Health of London for 1912 will be given by Dr. Simon Flexner, of the Rockefeller Institute for Medical Research, New York.

Yellow Fever at Honolulu. —Report from Honolulu, Hawaii, states that a case of yellow fever, said to be the first ever known at that port, was discovered on Oct. 30, aboard the Japanese steamer *Hong Kong Maru*, just arrived from Manzanillo, Mexico. The patient has been isolated and the ship duly quarantined.

Poliomyelitis in Kansas and in New Jersey. — Report from Topeka, Kan., states that acute poliomyelitis is still epidemic in that state, where there are said to be at present about one hundred and fifty cases of the disease. At Princeton, N. J., a student in the university died of poliomyelitis on Oct. 29, his death being the second that has occurred there from this infection during the past three weeks.

Some Recent Charitable Bequests. — Among other charitable bequests, the will of the late Margaret W. Frothingham, of Cambridge, Mass., allowed last week before the Middlesex Probate Court, makes legacies of $1,000 to the Cambridge Hospital and $500 to the Kindergarten for the Blind, Jamaica Plain.

The will of the late James C. Jordan, of San Francisco, Cal., recommends, although it does not bind, his widow and executrix to present to the Massachusetts General Hospital the sum of $5,000 to be used in such manner as she and the administrator of the hospital may decide.

Two Active Living Centenarians. — Mr. Charles Beaulieu, of Salem, Mass., is said to have been born on Nov. 3, 1810, in Canada. He was one of a family of fifteen children, and was brought up on a farm. He married in 1836, and had thirteen children, of whom nine are now living. He has always been a hard worker, has lived much out of doors, and still walks a great deal. To these habits he attributes his longevity and present vigorous good health.

Mr. O. M. Ziebach, alleged to be one hundred and seven years of age, was arrested and imprisoned on Nov. 1, at Fort Totten, Grand Forks, N. D., on a charge of introducing spirituous liquor into an Indian reservation. He is said to be the oldest man ever placed under arrest in the United States. It seems unfortunate that such venerable years should not have induced in him greater propriety and sobriety of conduct.

Testimonial Dinner to Dr. J. M. Bodine. — For forty-five years Dr. James Morrison Bodine, as Dean and President of the Faculty, has presided over the destinies of the University of Louisville Medical Department. Now entering his eightieth year he continues to devote his energies to the cause of medical education. His many friends and pupils scattered throughout the country have deemed this an appropriate occasion to show their appreciation of his devotion and their affection for him personally.

To this end it has been decided to give him a testimonial dinner on Dec. 16, 1910, at the Seelbach Hotel in Louisville. Those friends whom the committee has been unable to reach by invitation are cordially invited to attend and are requested to signify such intention at once by writing to the chairman of the committee.

Cholera in Italy. — During the week ending Nov. 5, 63 new cases and 28 deaths of Asiatic cholera are reported to have occurred in Italy, showing a slight increase over the previous week. It must be remembered, however, that these figures are probably not entirely accurate or reliable. In a report recently made at Rome by the Italian national board of health, it is stated that much of the diffusion of the disease has been due to defects in the water supply of Apulia. It is expected that a measure will be introduced

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into the Italian parliament authorizing the immediate construction of improved works, dams, aqueducts and wells in the effort to provide better supply for this district, and appropriating for the purpose an amount equivalent to $60,000,000.

More Milk Convictions. — Two milk dealers of Everett, Mass., were last week fined $15 each before the Malden District Court for having in their possession, for sale, milk not up to the standard required by law.

Before the United States District Court at Concord, N. H., on Nov. 1, eleven milk producers of that state were fined $10 each for violation of the pure food law in shipping to Boston, for sale, "milk containing deleterious or putrid matter." The interests and safety of consumers in this city are dependent on the responsibility and conscientious zeal of public officials outside as well as within Massachusetts.

Punishment for Refusing Vaccination. — Last week, it is stated, about three hundred and fifty students and several instructors in the University of Minnesota, at Minneapolis, refused to be vaccinated after exposure to a case of smallpox which occurred in the vicinity. For this infraction of state law, which provides compulsory vaccination under such circumstances, all recalcitrants were quarantined in their rooms and forbidden to take any part in college exercises for three weeks. It is to be hoped that this wise and condign punishment will prove of value not only as a disciplinary measure, but as a check to the growth of the so-called "anti-vaccination sentiment," whose spread threatens danger to the community as well as to the individuals by whom it is entertained.

Decrease of Population in Iowa and Vermont. — Figures from the recent United States census are not yet complete, and until they are there is little profit in speculation upon them. Most important should be the figures representing relative growth in number of native and alien inhabitants. Apparently only two states in the Union have shown an actual decline in population, — Iowa and Vermont. In the former case, it is accounted for by migration to the Canadian Northwest; in the latter, partly by the drain of the Civil War, partly by migration to Boston. The data which give comparative birth-rates remain yet to be worked out. Upon them will rest our classification with the French or with the English in the matter of racial fertility.

Convention of Military Surgeons. — The nineteenth annual convention of the National Association of Military Surgeons of the United States was held last week in Richmond, Va. For the first time in the history of the association, the sessions were attended by representatives from several foreign countries, among them Great Britain, France, Germany, China, Canada, Mexico and Guatemala. At the meetings were discussed various topics relating to the health of soldiers in the regular army and in the national guard, and of sailors and marines. The last day of the convention, Nov. 4, was devoted to subjects connected with the work of the United States Public Health and Marine-Hospital Service. It was voted that the next meeting of the association be held at Milwaukee, Wis.

Railroad Casualties in the United States. — The risk of railroad travel in the United States is illustrated by statistics from a recent bulletin of the Interstate Commerce Commission. In the year ending June 30, 1910, 82,374 persons were injured and 3,804 killed in railroad accidents in this country, an increase of 18,454 injured and 1,013 killed over the preceding year. That these figures are relatively much higher than the corresponding figures in Great Britain illustrates admirably the reckless carelessness and the cautious stability of the respective peoples. Railoads furnish not only much of the romance, but a considerable proportion of the surgical trauma of modern life, among both employees and passengers. Much of this waste of life and health would be as preventable as many of the infectious diseases by intelligent care.

American Public Health Association. — The American Public Health Association, comprising the United States of America, the Dominion of Canada, the Republic of Mexico and the Republic of Cuba, will hold its 1911 meeting in Havana, Cuba, from Dec. 4 to 9. The prospect of having the Association again in Havana has aroused the warmest interest among the physicians there, the secretary of sanitation, Dr. Varona, being particularly interested. The Academy of Medicine has offered its building for the general section meetings. The Hotel Sevilla will be the headquarters of the association. A few years ago a meeting in Havana would probably have discussed yellow fever. The changed situation in Cuba with respect to that disease is shown by the fact that yellow fever has been so completely extinguished on the island that

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the local physicians desire rather that tuberculosis be given the most prominent place. The question of the milk supply will also be considered.

It is hoped that at this meeting the recently organized Sociological Section, and the Section on Sanitary Engineering, which was tentatively authorized by the Milwaukee meeting, may be put upon substantial foundations.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON.—For the week ending at noon, Nov. 8, 1910, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 50, scarlatina 26, typhoid fever 29, measles 8, smallpox 0, tuberculosis 54.

The death-rate of the reported deaths for the week ending Nov. 8, 1910, was 13.90.

BOSTON MORTALITY STATISTICS.—The total number of deaths reported to the Board of Health for the week ending Saturday, noon, Oct. 15, 1910, was 205, against 181 the corresponding week of last year, showing an increase of 24 deaths, and making the death-rate for the week, 15.94. Of this number 109 were males and 96 were females; 200 were white and 5 colored; 138 were born in the United States, 64 in foreign countries and 3 unknown; 51 were of American parentage, 126 of foreign parentage and 28 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 33 cases and 3 deaths; scarlatina, 9 cases and 0 deaths; typhoid fever, 30 cases and 2 deaths; measles, 4 cases and 0 deaths; tuberculosis, 42 cases and 22 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 25, whooping cough 2, heart disease 31, bronchitis 3. There were 16 deaths from violent causes. The number of children who died under one year was 50; the number under five years, 64. The number of persons who died over sixty years of age was 46. The deaths in public institutions were 83. Anterior poliomyelitis, 1 case and 1 death.

Of the above infectious diseases the following were non-residents: Consumption, 3 cases and 5 deaths. Scarlet fever, 1 case. Typhoid fever, 1 case.

Deducting deaths of non-residents, the total is 174 and the death-rate is then 13.53.

RECEPTION AT THE FREE HOSPITAL FOR WOMEN. — On Nov. 3, a reception, to which we made reference in last week's issue of the JOURNAL, was held at the Free Hospital for Women, Brookline. Tea was served in the afternoon and all the wards of the hospital were opened for inspection by visitors.

SALE FOR ST. MONICA'S HOME. — The annual sale for the benefit of St. Monica's Home, Roxbury, is to be held to-day, Nov. 10, at Trinity Parish Hall, on Clarendon Street.

THE DOCTOR'S DILEMMA AGAIN. — In last week's issue of the JOURNAL we referred to an address by Dr. Richard C. Cabot on "The Doctor's Dilemma." Since that time Dr. Arthur W. Fairbanks, of Boston, in a letter to the public press, has taken issue with Dr. Cabot and expresses his belief that the growth of hospitals in no way menaces the existence of private physicians.

DONATION DAY AT CULLIS HOME. — On Tuesday of this week, Nov. 8, was held the annual Donation Day of the Ladies' Auxiliary of the Cullis Consumptives' Home, Dorchester. The administration rooms of the home were open throughout the day for the sale of articles contributed by friends of the institution. It is expected that a considerable sum of money has been realized from this sale.

FAIR FOR THE BROOKLINE DAY NURSERY. — On Friday, Nov. 11, to-morrow, a fair will be held by the managers of the Brookline Day Nursery, at the Nursery Building, for the benefit of the institution. The fair will be open from 10 A.M. to 6 P.M., and luncheon and tea will be served at appropriate hours. The Nursery has now been established nearly fifteen years, and its work is steadily increasing.

HIGH DEATH-RATE IN FALL RIVER. — In the issue of the JOURNAL for Oct. 27 we published a note stating that in 1909 the city of Fall River, Mass., had the second highest death-rate of cities with a population of one hundred thousand or over in the United States. This statement, which was also made in the public press, was questioned by the Fall River Board of Health. The matter has been investigated by the director of the census bureau of the Department of Commerce and Labor at Washington, D. C., and in a bulletin just issued he reiterates and confirms the original figure, 19.1. This high rate he believes due largely to the excessive infant mortality. In Fall River in 1909 the mortality of infants under one year was 39% and that of children under five years 50% of the total mortality, a proportion "greater

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than that of any other large city in the United States, and nearly as great as that of the Filipino population of Manila, which was 64.9% for 1909."

NEW YORK.

Bequests.—Among the charitable bequests in the will of the late Isaac Smith Remsen, president of the I. S. Remsen Manufacturing Company of Brooklyn, is one of $5,000 to the Eastern District Hospital and Dispensary, Brooklyn.

A Low Death-Rate. — It is gratifying to note that the death-rate in the city in the month of October was one of the lowest, if not actually the lowest, ever recorded for a month. It was 13.90, as against 14.48 in September and 15.26 in October, 1909. The corrected death-rate, excluding non-residents and infants under one week old, was 13.03. Among the diseases in which there was a diminished fatality were the following: The weekly average of deaths from measles declined from 7 in September to 2.5 in October; the weekly average from scarlet fever from 3.75 to 2.75; from pulmonary tuberculosis, from 159 to 154.5; from acute bronchitis, from 14 to 11.25; from bronchopneumonia, from 67.25 to 63; from diarrheal diseases, from 190.75 to 146; from diarrheals in children under five years of age, from 181.5 to 138; and from cirrhosis of the liver, from 23.25 to 18. Among the diseases which showed an augmented mortality were the following: The weekly average of deaths from typhoid fever increased from 15.25 to 19; from diphtheria and croup, from 13.5 to 16; from pneumonia, from 46.5 to 67; from cancer, from 74 to 75; from apoplexy and softening of the brain, from 18.75 to 23.75; from organic heart diseases, from 108.75 to 110; and from appendicitis and typhlitis, from 9 to 15. While there is some increase in the deaths from typhoid fever over September, it is noticeable that the mortality from this cause in the city of New York is now less than at the same period last year.

Endowment, New York Foundation. — The bequest of $1,000,000 left by the will of Louis A. Heinsheimer to six Jewish charitable institutions, among which were the Mount Sinai Hospital and the Montefiore Home and Hospital, on condition of their uniting in a single federation, having reverted, in consequence of their refusal so to federate, to the testator's brother, Alfred M. Heinsheimer, the latter has now devoted the full amount of the bequest to the endowment of a new organization which he has founded. This has been chartered under the laws of the state of New York to promote charitable, educational and philanthropic enterprises, and is to be known as the New York Foundation. It will be absolutely non-sectarian in character, and the income of the foundation is to be expended preferably in co-operation with established institutions. Applications for appropriations can be made by the officials of any charitable or philanthropic institution or society, and these will be granted as far as possible in such cases as meet with the approval of the trustees. The president of the Board of Trustees is Dr. Morris Loeb, and the treasurer, Isaac N. Seligman, who is also treasurer of the St. John's Guild.

## Current Literature.

Medical Record.

Oct. 29, 1910.

1. Grawitz, E. *Pernicious Anemia; Its Definition and Treatment.*
2. Wells, W. A. *Suppuration of the Antrum of Highmore.*
3. Rockwell, A. D. *Remarks on the Twentieth Anniversary of the American Electrotherapeutic Association.*
4. *Schwartz, B. *A Case of Typhoid Meningitis.*
5. Sheedy, B. De F. *The Saw and Crushing Instruments in Surgery of the Nasal Septum.*
6. Wolbarst, A. L. *Gonococcus Urethritis in Male Children.*
7. Gillman, G. *The Bedside Widal Test.*
8. Dlugasch, L. *Exophthalmic Goiter Simulating Typhoid Fever.*

4. Schwartz reports a case of typhoid meningitis in a boy of eight. Two weeks before he entered the hospital he began to have headache and abdominal pain, soon followed by a troublesome diarrhea and vomiting. Three days before admission he took to bed. On admission he was mentally dull; temperature, 101°, soon rising to 105°; pulse, 102; respirations, 36. Spleen palpable. Physical examination otherwise negative. No rose spots. Widal negative. The first meningeal symptom was noticed on the sixteenth day of the disease — a slight Kernig, soon followed by inequality of the pupils. Whites, 10,000; 72% polymorphonuclears. Two days later meningitic symptoms were more marked. Whites, 24,400; 68% polynuclears. Harsh breath sounds and moist râles at right base, posterior. Next day, coma and relaxation of the sphincters; temperatures, 101.5°; pulse, 144; respirations, 56. The diagnosis of tuberculous meningitis was made and lumbar puncture done. Twenty-five cubic centimeters of somewhat turbid fluid under great pressure were obtained. Death followed a few hours later. Examination of the spinal fluid showed cellular elements in excess with a predominance of small lymphocytes. Smear showed many Gram-negative bacilli, no cocci. B. typhosus was obtained in pure culture.

The writer reviews the literature of typhoid meningitis and insists that cases cannot be considered proven where contamination of the cerebrospinal fluid from admixture of blood is not eliminated. This is an essential precaution because typhoid bacilli are present in the circulating blood in practically all cases of typhoid fever. [L. D. C.]

New York Medical Journal.

Oct. 29, 1910.

1. Da Costa, J. C. *Report of Two Cases of Revolver Shot Wound of the Brain.*
2. Tousey, S. *Demonstration of a Simplified Technic for*

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*X-Ray Localization of Bullets in the Thicker Portions of the Body.*
3. ABRAMS, A. *A Scientific Interpretation of Knatsu or the Japanese Method of Restoring Life.*
4. KINGSBURY, J. *Some Circinate Syphilides.*
5. BUERGER, L., AND WOLBARST, A. L. *The Fulguration Treatment of Papillomata of the Bladder.*
6. HAMILTON, W. D. *The Surgical Treatment of Chronic Gastritis and Duodenal Ulcer and of Cancer of the Stomach.*
7. *EGGLESTON, E. L. *Observations on the Variability of the Gastric Juice.*
8. KAHN, M. *Shakespeare's Knowledge of Medicine.*
9. POHLY, A. G. *Anemic Ulcer of the Throat.*

7. Eggleston reports on some clinical experiments with stomach cases. He finds that there may be marked variations in the composition of gastric juice secreted under the stimulus of the same food. These variations may be due to psychic influences. The inhibitory effect of iced food or drink on gastric secretion is slight. Foods containing free fats in any quantity, whether frozen or at ordinary temperature, have a decided inhibitory effect. Gastric secretion is markedly increased by fruit juices, cold or warm. Compound tincture of gentian seems to have but little effect as a gastric stimulant. [L. D. C.]

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

OCT. 29, 1910.

1. MALLORY, F. B. *Recent Progress in Microscopic Anatomy and Differentiation of Cancer.*
2. DOANE, P. S. *Mechanical Ileus Complicating Pregnancy.*
3. BABLER, E. A. *Colon Bacillus Infection of Operation Wound.*
4. *LEVY, R. *The Tuberculous Tonsil.*
5. BECK, J. C. *Conditions Demanding Enucleation of the Faucial Tonsils.*
6. SHURLY, B. R. *Enucleation of the Faucial Tonsils; Its Difficulties and Contra-Indications.*
7. LOEB, L. *Recent Progress and Present Status of Experimental Research in Cancer.*
8. WEIL, R. *Biochemical Investigation of Malignant Tumors and Its Diagnostic Application.*
9. *TYZZER, E. E. *Relation of Heredity to Cancer.*
10. BLOODGOOD, J. C. *Recent Progress in Surgical Treatment of Malignant Growths.*
11. MYER, J. S. *Cardiospasm with Dilatation of the Esophagus.*
12. *CARREL, A., AND BURROWS, M. T. *Cultivation of Sarcoma Outside of the Body.*

4. Levy claims that tuberculosis of the tonsils occurs more frequently than previously recognized, owing to newer methods of investigation. Clinically, tuberculosis of the pharynx with or without tonsillar involvement is among the rarer manifestations of tuberculosis. Clinical tuberculosis of the tonsils and that determined by histological examination present marked differences. There is absence of symptoms in the latter and definite subjective and objective manifestations in the former. The diagnosis of true tuberculosis of the tonsils is more satisfactory when based on both clinical and histologic findings. The clinical form is a very grave condition and is probably not curable. Extirpation of the tonsil is rarely indicated in tonsillar tuberculosis.

9. Tyzzer states that the hereditary influence in cancer is shown in regard to species by the frequency of mammary cancer in mice, while they are rare in cattle, which, however, frequently develop primary tumors of the liver and adrenal. Although much of the evidence collected tends to indicate that heredity is not an important factor in the development of cancer, it would appear that this question cannot be definitely settled without more accurate methods than have been hitherto employed. The importance of experimental breeding of animals cannot be overestimated for this work.

12. Carrel and Burrows, in their second article, report the successful growth of sarcomatous tissue outside of the body, even to the cultivation of a second generation. These grow luxuriantly. This work may open new fields for the study of cancer also. [E. H. R.]

THE LANCET.

OCT. 1, 1910.

1. *STUART-LOW, W. *Malignant Disease of the Nasal Passages; Its Diagnosis, Pathology and Treatment.*
2. *MOULLIN, C. M. *The Essential Cause of Gastric and Duodenal Ulcer.*
3. WOODCOCK, H. DE C. *The Physique of the Phthisical.*
4. BARLING, J. E., AND WELSH, D. A. *A Symptom-Complex in Ruptured Abdominal Hydatid.*
5. TAKAKI, Y. *Clinical Surgery in Japan.*
6. ROBINSON, H. B. *Henoch's Purpura with Enteric Intussusception. Reduction; Intussuscepted Area Gangrenous; Resection Two Feet Five Inches of Gut; Immediate End-to-End Union; Recovery.*
7. BOLTON, J. E. *The Relief of Symptoms of Prostatic Obstruction by Electrical Treatment.*
8. CHRISTOPHERSON, J. B. *A Reminder of the Battle of Omdurman. An Account of the Removal of Half a Shrapnel Bullet which had Remained Embedded in the Leg of an Arab for Eleven Years after the Battle, Sept. 2, 1898, to Dec. 1, 1909.*
9. BEARDS, C., AND GOLDIE, W. L. *The Etiology and Diagnosis of German Measles (Rubeola).*
10. THOM, G. *Stovaine; Its Use in the Treatment of Shock in Injuries of the Lower Extremities.*
11. GADD, H. W. *The Ownership of Medical Prescriptions.*
12. HIRSCH, C. T. W. *Motoring Notes.*

1. Stuart-Low, discussing malignant disease of the nasal passages, concludes (1) that pain is not to be relied on as an indication; (2) increasing and persistent stuffiness especially if unilateral is always suspicious; (3) unilateral and recurring hemorrhage is suspicious and the combination of this and stuffiness still more so; and (4) early diagnosis and early operation are of the utmost importance.

2. Moullin believes that, aside from trauma direct or indirect, embolism is the real cause of gastric ulcer in the vast majority of cases. [J. B. H.]

BRITISH MEDICAL JOURNAL.

OCT. 1, 1910.

1. RICHET, C. *Ancient Humorism and Modern Humorism.*
2. SPENCER, W. G., AND DORAN, A. *Absence of the Fallopian Tubes and of Menstruation.*
3. WILLIAMS, L. *An Address Entitled the Quickening Spirit.*

*Section of Surgery.*

4. KOCHER AND MACKENZIE, H. *Discussion on the Surgical Treatment of Graves' Disease.*
5. BOND, C. J. *A Method of Establishing Colotomy Openings and Permanent Ureteral Fistulæ.*
6. MILES, W. E. *The Radical Abdomino-Perineal Operation for Cancer of the Rectum and of the Pelvic Colon.*
7. KENNEDY, R. *A Case of Secondary Suture of the Circumflex Nerve.*
8. CRILE, G. W. *On Certain Factors that Influence the Immediate Results of Surgical Operations.*
9. MUMMERY, P. L. *The Operative Treatment of Chronic Mucous and Ulcerative Colitis.*
10. THOMSON, A. *Conditions Liable to be Mistaken for Cancer of the Stomach.*
11. BIRD, F. D. *Conditions Simulating Cancer of the Stomach.*
12. PATERSON, H. J. *The Early Diagnosis and Treatment of Cancer of the Stomach.*
13. MOULLIN, C. M. *The Action of Gastro-Enterostomy in Cases of Gastric and Duodenal Ulcer in which there is no Mechanial Difficulty.*
14. DEANSLEY, E. *Excision of Gastric Ulcers.*
15. MACLAURIN, C. *The Clinical Manifestations, Diagnosis and Treatment of Hydatid Disease of the Liver.*

*Section of Tropical Medicine.*

16. CANTILE, J. *Rupture of Hepatic Abscesses into the Lung.*
17. PHILLIPS, L. *Sandfly Fever (Phlebotomus Fever or "Pappatacifieber") in Cairo.*
18. FINK, G. H. *Dysentery.*
19. MADDEN, F. C. *The Incidence of Bilharziosis in Egypt and Its Clinical Manifestations.*

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20. Phillips, L. *Typhoid and Paratyphoid Fever in Egypt.*
21. Archibald, R. G. *Human Botryomycosis.*
22. White, G. D. *The Effect of a Mosquito Net on the Air Within It. (Based upon Eighty Analyses of the Air Inside and the Air Outside the Net.)*

Oct. 8, 1910.

1. Mott, F. V. *The Huxley Lecture on Hereditary Aspects of Nervous and Mental Diseases.*
2. *Hutchison, R. *The Schorstein Lecture on Congenital Pyloric Stenosis.*
3. Sprigge, S. S. *Prizes and Performances.*
4. Roughton, E. W. *Woman's Sphere in Medicine.*
5. Thorburn, W. *The Evolution of Surgery.*

BRITISH MEDICAL ASSOCIATION.

*Section of Medicine.*

6. Philip, R. W. *Introductory Remarks.*
7. Edsall, D. L., *et al. Discussion on Acidosis.*
8. Goodhart, J. F., *et al. Discussion on Chronic Constipation and Its Treatment.*
9. Humphrey, L. *Aneurysm of the Aorta Communicating with the Superia Vena Cava.*
10. Humphrey, L., and Dixon, W. E. *A Case of Acromegaly with Hypertrophied Heart; Pressor Substances in the Urine.*
11. Mackintosh, J. S. *Evolution of Racial Types of Europe: Its Bearing on the Racial Factor in Disease.*
12. Guelpa, G. *Starvation and Purgation in the Relief of Disease.*
13. Harris, W. *The Injection Treatment of Neuralgia and Sciatica.*
14. Sayer, E. *The Effects of Electrical Currents upon Blood Pressure.*
15. *Wilkinson, W. C. *Tuberculin in Pulmonary Tuberculosis.*
16. Ewart, W. *On Percussion of the Vertebræ.*
17. Souttar, H. S. *An Improved Form of Gastroscope.*
18. Hill, L. *The Influence of Air in Treatment.*

*Section of Surgery.*

19. Lane, W. A., *et al. Discussion on the Operative Treatment of Simple Fractures.*
20. Wickham, L. *Radium in the Treatment of Cancer.*
21. Martell. *A New Trephine.*

2. Hutchison, discussing congenital pyloric stenosis and its treatment, is of the opinion that all cases should be treated medically at first. He finds it very hard to decide which cases should be treated medically and which surgically; he believes a period of medical treatment alone can decide this, but that it should not be carried on too long if there is no improvement and the child's strength exhausted before handing the case over to the surgeon.

15. Wilkinson repeats his previously expressed views in enthusiastic praise of tuberculin as a most potent agent in the cure of all forms of pulmonary tuberculosis. He believes that in the majority of cases the sanatorium only partially finishes its work, discharging patients not cured who soon relapse. According to him, tuberculin is a much more important factor. Sahli, of Berlin, corroborates his remarks; others do not agree in regard to what he calls the failure of the sanatorium. R. W. Philip, in discussing both points of view, presents a sane and moderate statement of this question. [J. B. H.]

Deutsche Medizinische Wochenschrift. No. 40.

Oct. 6, 1910.

1. Pagel, J. *The Berlin Medical Faculty in Its First Hundred Years.*
2. Waldeyer, W. *Results in the Science of Anatomy in the Berlin Faculty during the First Hundred Years of Its Existence.*
3. Schwalbe, J. *The Medical Share in the Foundation of the University of Berlin.*
4. Freund, W. A. *What has German Medicine in the Nineteenth Century Added to the General Advances of Culture?*
5. Haeckel, E. *The Boundaries of Natural Science.*
6. Ribbert. *Sickness.*
7. Wassermann, A. V. *The Influence of Specificity on Modern Medicine.*
8. Hegar. *Disturbances in Development.*
9. Erb, W. *Clinical Casuistics from Practice. The Difficulty in Diagnosing Progressive Muscular Dystrophy.*
10. Killian, G. *The Teaching in Regard to Reflex Neuroses from the Nose.*
11. Mamlock, G. *The Fiftieth Anniversary of the Founding of Friedrich Wilhelms University in Berlin in October, 1860.*

This number of the journal is taken up almost exclusively with an historic sketch of the progress made by the faculty of medicine at Berlin. It is in honor of the one hundredth anniversary of the establishment of that faculty. The article by Pagel is especially complete and covers the advances in most of the departments of the faculty. [C. F., Jr.]

Münchener Medizinische Wochenschrift. No. 32.

Aug. 9, 1910.

1. *v. Bergmann, G., and Guleke, N. *Theory of Pancreatic Poisoning.*
2. v. Franqué, A. *Artificial Abortion and Vaginal Cæsarean Section for Habitual Death of the Fetus.*
3. Klingmüller. *Treatment of Gonorrhea in the Male.*
4. *Blum, L. *Treatment of Sciatica by Epidural Injections.*
5. Bergel, S. *Relation of Lymphocytes to Fat Splitting and Bacteriolysis.*
6. Viganò, L. *Specificity of the Meiostagmin Reaction in Typhoid.*
7. Solger, F. B. *Pictorial Representation of Primitive Man and Its Scientific Value.*
8. Küster, H. *Treatment of Transverse Impacted Fetus by Rhachiotomy.*
9. Mainzer, J. *A New Obstetrical Instrument.*
10. Polland, R. *Novoiodin, a New Substitute for Iodoform.*
11. Stromeyer, F. *Cryptogenetic Tetanus.*
12. *Graupner. *Nephritis in Basedow's Disease.*
13. Weber, A. *An Automatic Apparatus for Developing X-Ray Plates.*

1. v. Bergmann reviews the experimental work on pancreatitis and gives additional experimental evidence in favor of his theory of its origin. He then reiterates his conclusions, namely, that by autolysis of the pancreas a deadly poison may be produced both in man and in animals; that this autolysis may take place either when the pancreas is *in situ* or when a piece of sufficient size has been placed free in the peritoneal cavity; that a fatal poisoning may also be produced by the pancreatic juice of the same or of another animal or by commercial preparation of trypsin; that protection against this poisoning may be developed by preparatory injection of preparations of trypsin; but that neither trypsin nor steapsin of themselves cause the poisoning.

4. Blum describes his technic of epidural injection and recommends it for certain obstinate forms of sciatica and for a variety of other conditions. He says it is more effective than perineural injection, almost painless and free from danger. The canula is inserted through the lower sacral foramen and carried up several centimeters into the sacral canal but high enough to enter the dural sac.

12. The writer states that in severe cases of Basedow's disease hyperplasia of the thymus, lymph glands, spleen, and of lymphatic tissue in the thyroid and bone marrow may be observed, and that as a terminal condition there may be a severe toxic nephritis with necrosis of epithelium. [G. C. S.]

No. 33. Aug. 16, 1910.

1. *Döderlein, A. *Origin and Prevention of Puerperal Fever.*
2. Iversen, J. *Treatment of Syphilis with Ehrlich's "606."*
3. Taege, K. *Successful Treatment of a Nursing, Syphilitic Infant by Giving the Mother "606."*
4. Jacob, L. *Treatment of Typhoid with Pyramidon.*
5. Eschbaum. *Observations on Meningitis Cerebrospinalis Epidemica.*

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6. *FRÄNKEL, J. *Results of the Crawling Treatment.*
7. *BECK, E. G. *Diagnostic and Therapeutic Value of Bismuth Paste in Chronic Suppuration.*
8. SAATHOFF, L., AND WIGGER. *The Personal Equation in Tuberculin Treatment.*
9. ENGEL, H. *Defervescence of Tubercular Patients under Koch's Old Tuberculin.*
10. BRAUS, H. *Experimental and Embryological Aspects of the Etiology of Congenital Luxation.*
11. HARNACK, E., AND HILDEBRANDT, H. *B. Chloromorphid as Companion and Antagonist of Apomophine.*
12. NEUMAYER, V. L. *Treatment of Suppuration with Crystalline Potassium Permanganate.*
13. ERKES. *Nösske's Method for Severe Injuries of the Extremities with Imminent Gangrene.*
14. DRIVER. *A New Eye-Dropper.*
15. GOLDFLAM. *Intermittent Limp.*

1. Döderlein emphasizes the loss of life that might be avoided by greater cleanliness in the handling of puerperal cases and makes a strong plea for the universal use of rubber gloves in this work.

6. The writer reports much improvement in cases of scoliosis in which the crawling treatment was tried.

7. Beck discusses fully the uses of bismuth paste in suppurative conditions. [G. C. S.]

BERLINER KLINISCHE WOCHENSCHRIFT. No. 41.

OCT. 10, 1910.

*The Hundredth Anniversary of the Royal University of Friedrich-Wilhelm in Berlin.*

This entire number is devoted to the development of the medical departments of the university and consists of historical articles by the members of the faculty. [J. L. H.]

DEUTSCHE ZEITSCHRIFT FÜR CHIRURGIE. BD. 105.

HEFT. 3–6. JUNE–JULY, 1910.

11. *BIERMANS, A. *The Operative Treatment of Hirschsprung's Disease.*
12. FRANKE, F. *Cure of Multiple Cholangitic Liver Abscesses by Drainage of the Gall Bladder, with Remarks on the Drainage of the Biliary Passages (Cholecystodochostomy).*
13. *MÜHSAM, R. *The Use of the Murphy Button in the Large Intestine.*
14. VOECKLER, T. *The Question of Primary Appendiceal Carcinoma.*
15. SCHLICHTING, F. *Hard, Traumatic Edema of the Dorsum of the Hand.*
16. LOSSEN, W. *Cases and Pathogenesis of Appendicitis Due to Foreign Body.*
17. v. STUBENRAUCH. *Plastic Repair of Ureteral Defects in the Female.*
18. HAIM, E. *Volvulus of the Small Intestine as a Late Sequel of Appendicitis.*
19. SONNENBURG, E. *Diagnosis and Treatment of the Early Stage of Acute Appendicitis.*
20. SIEGMUND, A. *Thyroid and Wound-Healing.*
21. GRUNERT. *Indirect Fractures of the Fibular Shaft.*
22. *ZIEGNER, H. *The Coxitic Dislocations of Early Childhood.*
23. Brief Communications:
    a. PIAZZA-MARTINI, V. *Diagnosis of the Adhesions of Large Abdominal Tumors to the Anterior Abdominal Wall by Means of Auscultation.*
    b. THÖLE. *Knitted Sleeve for Operating Gowns.*
    c. THIEDE, W. *A Case of Perforation of a Gastric Carcinoma into the Free Abdominal Cavity.*
24. RETZLAFF, O. *Late Sequelæ of Epityphlitis.*
25. ZESAS, D. G. *Duodenal Ulcer and Its Surgical Treatment.*
26. STREMPEL. *Hot-Air Treatment after Laparotomies as a Means of Exciting Peristalsis, with a Contribution to the Prevention of Postoperative Peritonitis.*
27. *STUCKEY, L. *The Knowledge of Retrograde Incarceration.*
28. KLAPP, R. *A New Method of Operative Intestinal Closure.*
29. SCHREIBER, R. *The Treatment of Syndactyly.*
30. ISELIN, H. *Gunshot Wounds of the Heart.*
31. CANESTRO, C. *Late Intestinal Hemorrhages after Operation for Strangulated Hernia.*
32. Brief Communications:
    a. UMBREIT. *Compound Traumatic Epiphyseal Separation of Both Bones of the Forearm.*
    b. UMBREIT. *Hemorrhagic Glossitis in Hemophilia.*

11. After reviewing the literature of previously reported cases, Biermans records four cases of megacolon treated surgically. From his study of the subject he concludes that such patients should always be first examined carefully for sphincteric spasm and for abnormal valve-formation in the rectum. In megasigmoid he advises resection at two sessions. In congenital idiopathic megacolon he recommends colo-anastomosis, followed by resection. Volvulus or profuse diarrhea he considers imperative operative indications.

13. Mühsam reports 13 cases in which the Murphy button was used 14 times in making anastomoses of the large intestine, and from his experience concludes:

(a) That the Murphy button is suitable and justifiable for such use.

(b) That the risk of leakage is no greater than in suture anastomosis.

(c) That the principal danger is closure of the button by feces or foreign bodies.

(d) That early post-operative evacuation of the bowel is desirable.

(e) That at the slightest evidence of intestinal obstruction, the anastomosis should be inspected.

(f) That the advantages of employing the Murphy button are its relatively easy technic and shortening of the operation.

22. Ziegner presents a study of six cases, with excellent x-rays, from which he concludes that the coxitis of early childhood is usually an osteomyelitic metastasis, and generally appears in infancy. Coxitic dislocations he considers are principally spontaneous dislocations following rapid and extreme distention of the capsule, which after a time come to resemble congenital dislocations, and should be treated on the same principles. Even when there is extensive destruction of the upper epiphysis, he believes that the prognosis of the replaced hip is favorable. Prophylactically wide prompt incision is indicated in every suppurative coxitis of early childhood.

27. Stuckey collects from the literature 35 previously reported cases of retrograde intestinal incarceration, to which he adds 4 from his own observation; and from a study of this series reaches the following conclusions:

(1) The exact cause of retrograde incarceration is unknown.

(2) The rapidly progressive gangrene of the incarcerated coils depends on one of the following conditions: (a) The cutting off of the mesenteric vessels within the abdominal cavity by kinking. (b) The double strangulation of the mesentery in the hernial ring. (c) The cutting off of the vessels of the cecum and lower section of the ileum by kinking.

(3) The most reliable symptoms of retrograde incarceration are tenderness and local distention of the bowel directly overlying the hernia.

(4) Attempts at taxis in strangulated herniæ should be absolutely rejected. The only rational treatment is immediate operation. [R. M. G.]

REVUE DE MÉDECINE.

SEPTEMBER, 1910.

1. PETRÉN. *Observation on the Treatment of Sciatica and Morbus Coxæ Senilis.*
2. CATOLA. *Investigations on the Central Nervous System of Children of Infirm Parents and Considerations of Pathological Predisposition.*
3. MARIE AND BEAUSSART. *Serum Diagnosis in Tuberculosis and the Etiology of Mental Diseases.*
4. *BERTIN AND GAYET. *Hereditary Syphilis and the Wassermann Reaction.*
5. *SALMON. *Pathological Sleep.*

4. Bertin and Gayet emphasize the importance of the serum reaction for syphilis in those cases of hereditary disease which lack the classical signs of the process. Hutchinson's triad is often absent, as well as the ordinary

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tertiary lesions. The search for spirochetæ and the Wassermann reaction enable far more diagnoses than were made formerly.

5. In a most interesting article Salmon considers the conditions and causes of normal and pathological sleep. The physiological process is due to the stimulation by toxic products of metabolism of the sleep function in a stimulus which is normally neutralized by the glands of internal secretion, the hypophysis in particular. Normal sleep is not so profound that we cannot be roused at once and take on the proper functions of the body without pause.

But a morbid process exists, — "l'hypersomnie," — which is characterized by deep sleep at night, superseded by constant drowsiness during the day. Such individuals are difficult to rouse and tend at once to resume the deep sleep at any time, even during any of the voluntary activities of the body. Such a condition is found in the presence of excessive secretion of the hypophysis, diminished thyroid, ovarian and testicular secretion; as well as with tumors at the base of the brain or the vault of the pharynx, causing irritation of the hypophysis. The passive cerebral congestion found in persons subjected to rarefied air and that following epileptic seizures causes a toxic action, which results in an excessive and abnormal sleep.

This pathological sleep, unlike the physiological process, is the result of toxic substances which are present from overproduction, or from the failure of the internal glands to neutralize such poisons. These substances penetrate to the brain itself and cause chromatic hypersecretion.

[L. H. P.]

Il Policlinico.

September, 1910.

MEDICAL SECTION.

1. Bocci, B. *Critical and Experimental Studies Concerning Certain Controversial Questions in Physiology.*
2. Frugoni, C. *Clinical Studies on Alterations of the Respiratory Rhythm, with Special Reference to the Anginal and Neurotic Forms.*
3. *Giulio, P. *A Case of Acute Yellow Atrophy of the Liver Following Acute Alcoholic Intoxication.*

3. Giulio reports a case of acute yellow atrophy of the liver from Genoa. The total duration of the disease wa one week, and from the onset of grave symptoms (con vulsions, coma and collapse) three days. There was noth ing unusual in the case which is of interest only from the standpoint of etiology. Acute parenchymatous hepatitis can be produced by a number of pathogenic agencies which may be classified as follows:

(1) Infections — streptococcus, staphylococcus, B. coli and others.

(2) Auto-intoxications — from abnormal products of metabolism.

(3) Poisons — phosphorus, chloroform, alcohol.

This patient was an alcoholic and had just been through an acute intoxication. Chronic alcoholism is universally recognized as a predisposing cause of acute yellow atrophy because of its degenerating effect on the liver cells. Less well recognized is the influence of acute alcoholism as an exciting cause of this disease.

[L. D. C.]

SURGICAL SECTION.

1. Gabaglio, R. *Fractures of the Carpal Scaphoid.* (To be continued.)
2. *Sabella, P. *Bilateral Ectopia and Sarcoma of the Testicle.*

2. Sabella reports an unusual case of bilateral complete retention of the testes, in which at the age of twenty-three there developed in each of the glands a tumor which, on removal by laparotomy, proved to be large round-cell sarcoma. At the end of a year after the operation there is no sign of recurrence or metastasis. In his discussion of the subject of ectopia testis, the author classes the varieties of retention as abdomino-lumbar (as in his case), iliac, inguinal and cruro-scrotal, the varieties of ectopia being sub-abdominal, crural and perineal. Pathogenetically he believes that malignant tumors of such retained or misplaced testes arise from the interstitial cells of the organ.

[R. M. G.]

# Miscellany.

## ARMY MEDICAL CORPS EXAMINATION.

The Surgeon-General of the Army announces that the first of the preliminary examinations for the appointment of first lieutenants in the Army Medical Corps for the year 1911 will be held on Jan. 16, 1911, at points to be hereafter designated.

Full information concerning the examination can be procured upon application to the "Surgeon-General, U. S. Army, Washington, D. C." The essential requirements to securing an invitation are that the applicant shall be a citizen of the United States, shall be between twenty-two and thirty years of age, a graduate of a medical school legally authorized to confer the degree of doctor of medicine, shall be of good moral character and habits, and shall have had at least one year's hospital training or its equivalent in practice after graduation. The examinations will be held concurrently throughout the country at points where boards can be convened. Due consideration will be given to localities from which applications are received, in order to lessen the traveling expenses of applicants as much as possible.

The examination in subjects of general education (mathematics, geography, history, general literature and Latin) may be omitted in the case of applicants holding diplomas from reputable literary or scientific colleges, normal schools or high schools, or graduates of medical schools which require an entrance examination satisfactory to the faculty of the Army Medical School.

In order to perfect all necessary arrangements for the examination, applications must be complete and in possession of the Adjutant-General on or before Jan. 3, 1911. Early attention is, therefore, enjoined upon all intending applicants. There are at present seventy-six vacancies in the Medical Corps of the Army.

## MEASLES AMONG THE ALEUTS.

The captain of the United States revenue cutter *Tahoma*, flagship of the Behring Sea patrol fleet, has recently reported at Port Townsend, Wash., that the native inhabitants of the Aleutian Islands are being rapidly exterminated by measles, tuberculosis and pneumonia. This affords another interesting illustration, like the history of the Kanakas in Hawaii, of the exalted, almost pestilential virulence assumed among primitive aborigines by infections of which civilized man has from long exposure acquired greater tolerance. Measles particularly, that "domestic cat among diseases," as Dr. Woods Hutchinson has called it, seems to recover among such peoples as the Aleuts pristine qualities that emphasize its relationship to the severer exanthemata. It has been recommended that the native population of the Aleutian Islands be assembled at suitable stations and placed under competent medical surveillance in the effort to check the ravages of these diseases until such time as a natural partial immunity to them may perhaps be developed.

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## RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, OCT. 29, 1910.

| CITIES. | Reported deaths in each. | Deaths under five years. | CITIES. | Reported deaths in each. | Deaths under five years. |
|---|---|---|---|---|---|
| New York | 1,171 | 374 | Waltham | 10 | 1 |
| Chicago | 517 | 147 | Pittsfield | 11 | 1 |
| Philadelphia | — | — | Brookline | 9 | 0 |
| St. Louis | — | — | Gloucester | 5 | 1 |
| Baltimore | — | — | North Adams | 7 | 1 |
| Cleveland | — | — | Northampton | 3 | 0 |
| Buffalo | — | — | Chicopee | 9 | 4 |
| Pittsburg | — | — | Medford | 2 | 1 |
| Cincinnati | — | — | Beverly | 4 | 1 |
| Milwaukee | — | — | Leominster | 2 | 1 |
| Washington | — | — | Hyde Park | 4 | 3 |
| Providence | — | — | Melrose | 5 | 0 |
| Boston | 203 | 56 | Newburyport | 7 | — |
| Worcester | 45 | 10 | Revere | 3 | 1 |
| Fall River | 28 | 14 | Westfield | 4 | 1 |
| Cambridge | 24 | 7 | Woburn | 2 | 0 |
| Lowell | 36 | 16 | Peabody | 5 | 1 |
| New Bedford | 30 | 19 | Marlboro | 3 | 0 |
| Lynn | 15 | 2 | Attleboro | 5 | 3 |
| Springfield | 19 | 5 | Adams | 3 | 1 |
| Lawrence | 22 | 8 | Clinton | 3 | 1 |
| Somerville | 16 | 3 | Gardner | 6 | 3 |
| Brockton | 12 | 5 | Milford | 5 | 0 |
| Holyoke | 21 | 8 | Watertown | 2 | 2 |
| Malden | 8 | 2 | Plymouth | — | — |
| Chelsea | 13 | 3 | Southbridge | 6 | 2 |
| Newton | 10 | 3 | Weymouth | — | — |
| Salem | 15 | 6 | Framingham | 1 | 0 |
| Haverhill | 9 | 1 | Wakefield | — | — |
| Fitchburg | 7 | 4 | Webster | 5 | 2 |
| Everett | 7 | 1 | Arlington | 6 | — |
| Quincy | — | — | Greenfield | 3 | 2 |
| Taunton | 11 | — | | | |

## APPOINTMENTS.

The following appointments have been made to the staff of the Rockefeller Institute for Medical Research: Francis Henry McCrudden, M.D., Chemist to the Hospital; Thomas S. Githens, M.D., Fellow in the Department of Physiology and Pharmacology; James B. Murphy, M.D., Fellow in the Department of Pathology and Bacteriology; A. R. Dochez, M.D., Bacteriologist to the Hospital; F. Medigreceanu, M.D., Laboratory Assistant to the Hospital; W. H. Manwaring, M.D., Assistant in Pathology.

## SOCIETY NOTICES.

THE NEW ENGLAND HOSPITAL MEDICAL SOCIETY. — This society will meet at the Kensington Chambers, corner Boylston and Exeter streets, Room 203, on Thursday, Nov. 17, 1910, at 7.30 o'clock. Section of Surgery, Dr. Elizabeth T. Gray, chairman. Subject: Cæsarean Section. 1. "Short Résumé of the History of Cæsarean Section," Dr. E. T. Gray. 2. "Indications for Cæsarean Section, from the Obstetrician's Standpoint," Dr. Mary F. Hobart. 3. "Technique of the Operation," Dr. Mary A. Smith. 4. "The Immediate Results of Cæsarean Section," Dr. John T. Williams. 5. "The End Results of Cæsarean Section," Dr. Nathaniel R. Mason.

DR. BLANCHE A. DENIG,
*Secretary.*

NEW ENGLAND PEDIATRIC SOCIETY. — The twelfth meeting of the New England Pediatric Society will be held in Sprague Hall, Boston Medical Library, on Saturday, Nov. 26, at 8.15 P.M. 1. Business and nomination of officers. 2. "The Youthful Psychopath," J. W. Courtney, M.D., Boston. 3. "Proctoscopy and Sigmoidoscopy in Infancy as applied to Ileo-Colitis" (Preliminary report), Henry I. Bowditch, M.D., Boston. 4. "Examination of Spinal Fluids in Various Meningeal Conditions in Children," Wm. P. Lucas, M.D., Boston. 5. "Exhibition of a Fetal Monstrosity," James R. Torbert, M.D., Boston. 6. Election of officers. Light refreshments will be served after the meeting.

CHARLES P. PUTNAM, M.D., *President.* FRITZ B. TALBOT, M.D., *Secretary.*

ESSEX SOUTH DISTRICT MEDICAL SOCIETY. — The second meeting of the year will be held at the Belmont Hotel, Gloucester, Tuesday evening, Nov. 15. Dr. George C. Smith, of Boston, will speak on the "Treatment of Chronic Cardiac Affections." Dinner will be served promptly at 6.45 P.M.

GEORGE H. CRAY, M.D., *President.* WALTER G. PHIPPEN, M.D., *Secretary.*

AMERICAN ACADEMY OF MEDICINE. (Specializing in Medical Sociology.) — The fourth mid-year meeting will be held at the Lafayette Hotel, Buffalo, Thursday, Dec. 1, and Friday, Dec. 2, 1910, being a conference on "The Sociologic Influence of Hospitals and Dispensaries." Members of the profession and all others interested in the subject of the conference are invited to be present.

CHARLES MCINTIRE, M.D., *Secretary,*
Easton, Pa.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT. (A Memorial and Historical Society.) — A meeting of the society will be held in Sprague Hall, Boston Medical Library, on Monday evening, Nov. 14, 1910, at 8.15. Program: "The Doctrine of Vitalism in Medicine," Dr. M. G. Seelig, St. Louis. Memorial meeting to Dr. H. L. Burrell. Speakers: Dr. E. H. Bradford, Dr. F. S. Watson, Dr. G. H. Monks. The members of the Suffolk District Medical Society are cordially invited to be present.

J. G. MUMFORD, M.D., *President.* DANIEL FISKE JONES, M.D., *Secretary,*
195 Beacon Street.

SOUTH BOSTON MEDICAL SOCIETY. — This society will hold its regular meeting, Monday, Nov. 14, in Hobah Hall. The paper for the meeting will be read by Medical Examiner Magrath. Subject: "Medico-Legal Advice in Massachusetts for General Practitioner." Refreshments will be served.

FRED N. STUART, M.D., *President.* JOHN C. ROGERS, M.D., *Secretary.*

BOSTON MEDICAL LIBRARY IN CONJUNCTION WITH THE SUFFOLK DISTRICT MEDICAL SOCIETY. — Medical section meeting, John Ware Hall, Wednesday, Nov. 16, 1910, at 8.15 P.M. "Acute Poliomyelitis," John Lovett Morse, M.D. Discussion by Drs. R. W. Lovett, W. E. Paul and W. P. Lucas.

EDWIN A. LOCKE, M.D., *Secretary,* 311 Beacon Street. HENRY JACKSON, M.D., *Chairman,* 380 Marlborough Street.

## RECENT DEATHS.

DR. EDWARD HOLMAN HAMILL, who died on Oct. 30 at Chatham, N. J., was born in Alabama in 1843. He served throughout the Civil War as a captain in the Confederate Army. For some years past he had been consulting medical director of the Prudential Insurance Company of Newark, N. J.

DR. WILLIAM S. SEARLE, who died last week in Brooklyn, N. Y., was born in 1833. He was a graduate of the University of Pennsylvania and a founder and former vice-president of the New York State Board of Medical Examiners. He had practised medicine in Brooklyn since 1870. He is survived by three daughters and two sons.

DR. JOHN H. NESBITT, of New York, committed suicide by shooting, on Oct. 27, on board the White Star steamer *Arabic*, while on his way to England. He was suffering from nervous breakdown and had gone abroad in the hope of regaining his health. Dr. Nesbitt had been a police surgeon in New York for twenty-five years, and on account of his ill-health had been granted a two months' leave of absence from this service. He was born in New York City in 1854, and was graduated from the College of Physicians and Surgeons, New York, in 1875.

DR. CHARLES H. SHEPARD, of Brooklyn, N. Y., died on Oct. 29, in the eighty-sixth year of his age. He was graduated from the New York Medical College in 1859, and, notwithstanding his advanced age, was in active practice up to the time of his last illness.

DR. ROBERT HUNTER DUNCAN, of Brooklyn, N. Y., died on Oct. 31, at the Jamaica (Long Island) Hospital, from Bright's disease. He was born at Barrington, Nova Scotia, in 1862, and was a graduate of the Mount Ellison University at Sackville, New Brunswick, and of the College of Physicians and Surgeons of Baltimore. He later continued his medical studies in Edinburgh, Scotland, and for several years he was a ship's surgeon on the Pacific Mail line of steamers.

DR. CHARLES B. CURRAN, of Brooklyn, N. Y., died from pneumonia on Nov. 1. He was born in Brooklyn on Dec. 23, 1872, and was graduated from the Long Island College Hospital in 1893. For some time he served on the staff of St. Mary's Hospital, Brooklyn, and for fifteen years was an inspector in the Health Department.

DR. MICHAEL B. VAN BUSKIRK, of Aurora, Cayuga County, N. Y., died at the residence of his daughter in New York City on Oct. 30. He was graduated from the medical department of the University of New York in 1866.

DR. PAUL T. KIMBALL, a well-known physician of Lakewood, N. J., died suddenly from cardiac disease, on Nov. 2. He was a brother of Dr. Reuel B. Kimball, of New York, and forty-eight years of age. He was graduated from the College of Physicians and Surgeons, New York, in 1887, and afterwards served as interne at both the New York and the Woman's hospitals.

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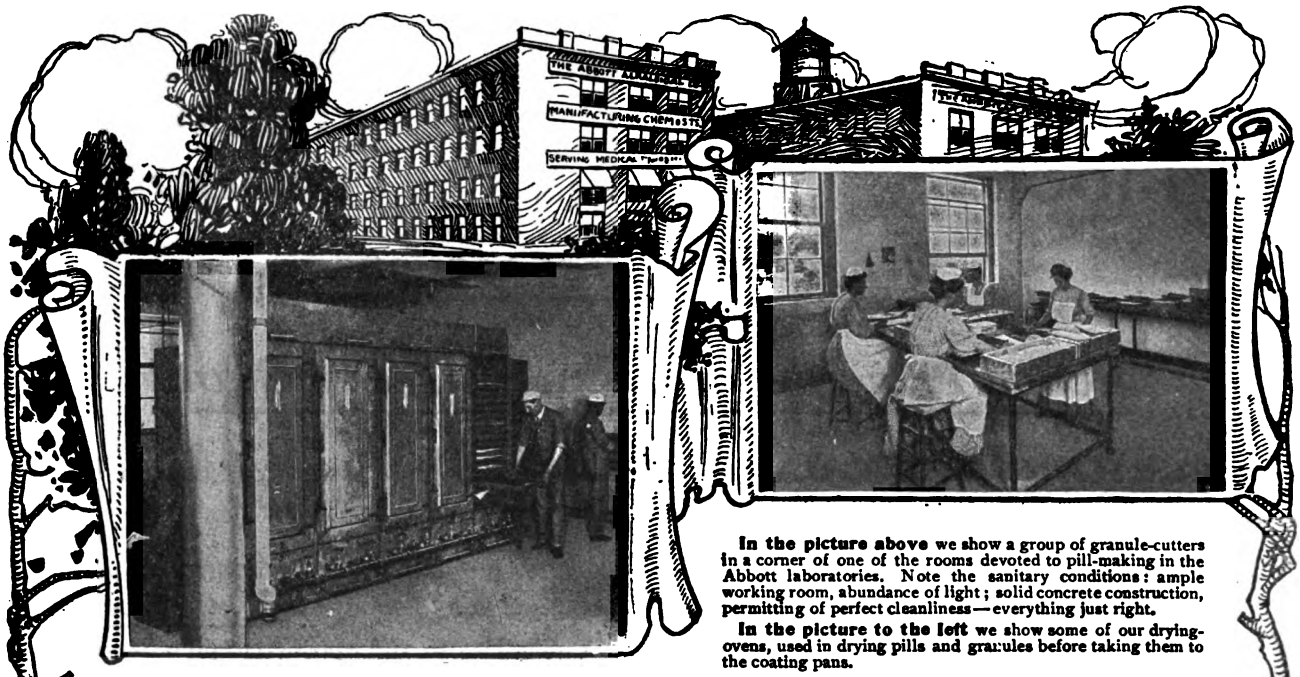

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# *A Few Reviews of*

# Goldthwait, Painter & Osgood's Diseases of the Bones and Joints

have been published. They are unanimous in their statement that the book is of exceptional value, that it is original, and that the purpose of the authors plainly set forth has been well accomplished.

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Although the authors in their preface disclaim any intention of writing a book on orthopedic surgery, this book is written with a remarkable breadth of view, and in a most scientific manner, and sums up well the modern knowledge on this branch of medicine. There is a marked absence of "canned material" from the book, which is most refreshing, the pathology is up to date and unusually good, and the differential diagnosis of the various diseases, except that of Potts' disease, is excellent. The chapter on osteomyelitis is far better than that on the same subject in most surgical textbooks, and those on tuberculosis of the smaller joints, the treatment of hip disease, and the technic of operations on tuberculous joints are all very well done, also that on pelvic articulations. The illustrations are numerous and clear, and made clearer by the notes that accompany them. It is evident throughout the book that the authors have studied their joints, and whenever it is possible they prove their case. The inclusion of a large number of histories is somewhat of a new departure. — *The Medical Record.*

---

The authors have entitled the book "Clinical Studies," perhaps to disabuse the minds of those who might expect a "textbook" along the old lines, and they offer these studies primarily "to those practitioners of medicine to whom sufferers from joint disease usually make their first appeal." This does not mean that the book is elementary in its scope. It represents, on the contrary, a large part of the experiences, deductions and also results of original investigations of three busy men handling annually a large amount of clinical material. But as the style of presentation is up to what we expect from Boston, this is a work which can be read from cover to cover by any medical man. * * *

As a whole, the volume stands as a contribution of science to humanity. Its pages not only show a spirit of aiding the cripple, but also breathe patriotic and humanitarian desires to help the nation and the race. It will awaken an interest in bone and joint diseases that, so far, has been dormant in many. It is another solar-plexus blow to the diagnosis "rheumatism." It should be read by every one who has treated, does now treat, or ever expects to treat, a case of bone and joint disease or disability. — *The Journal of the Minnesota State Medical Association.*

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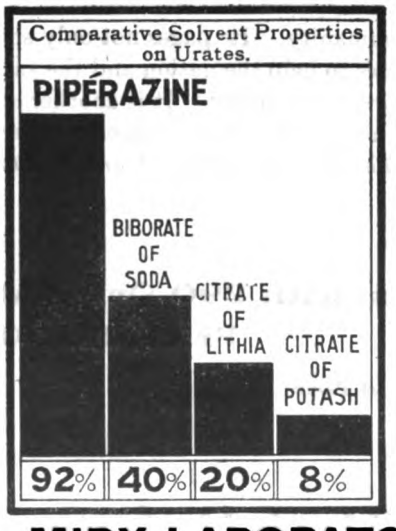


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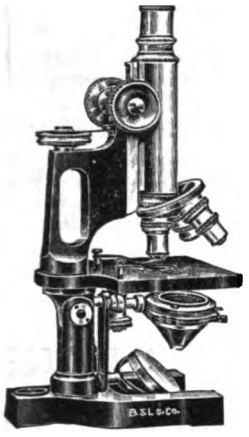

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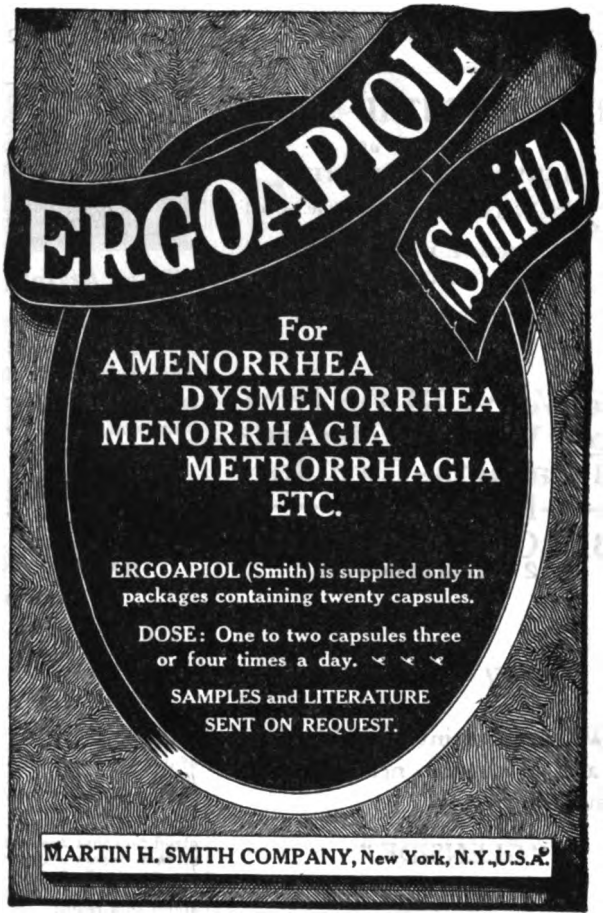


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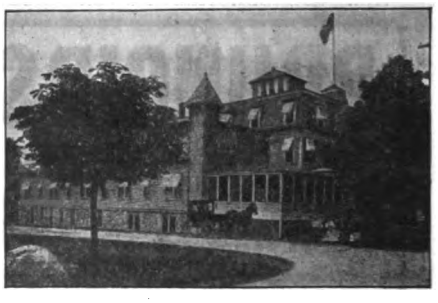

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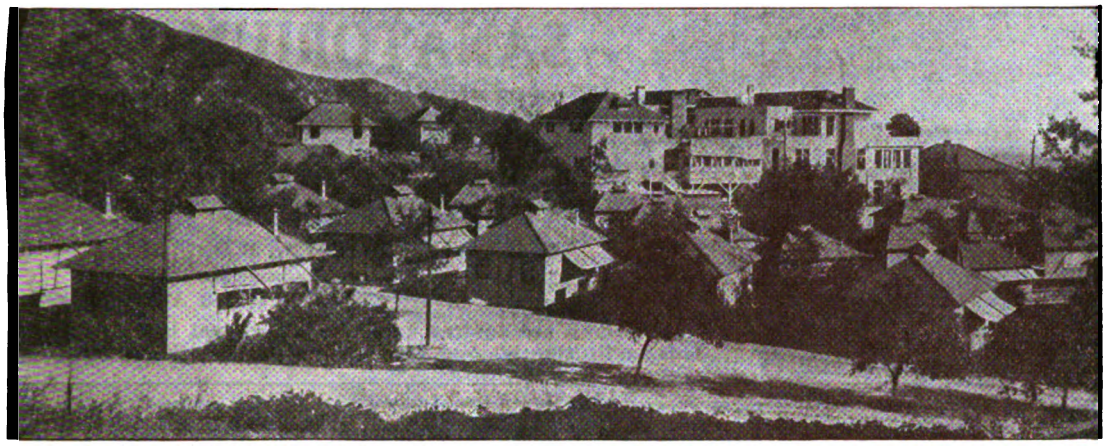

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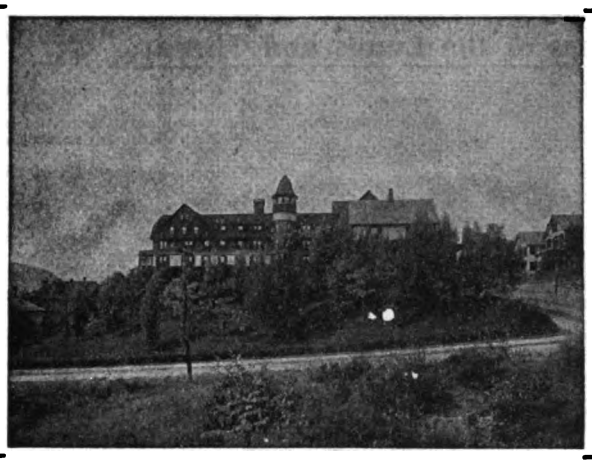

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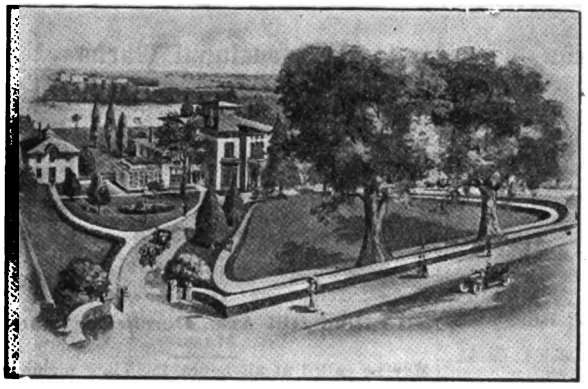

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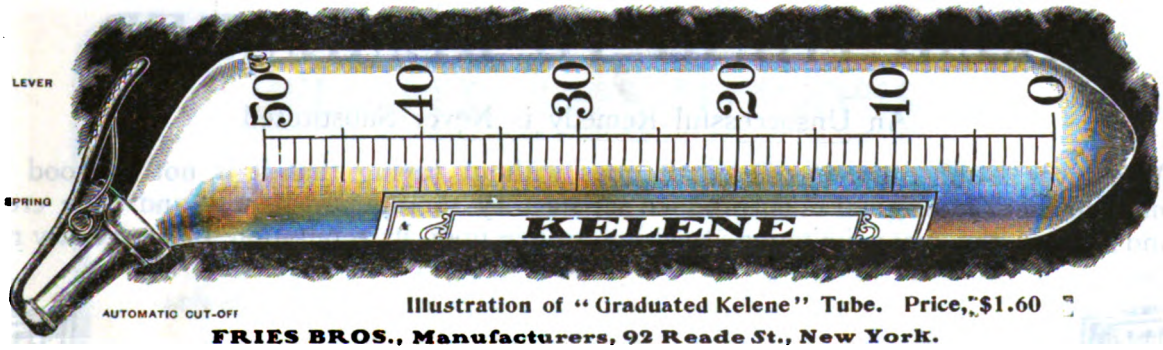


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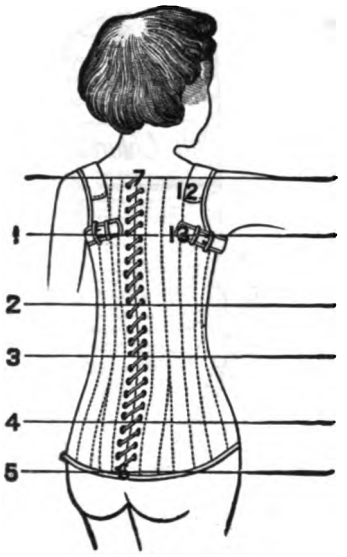


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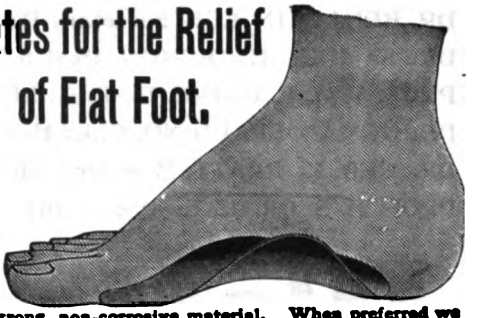

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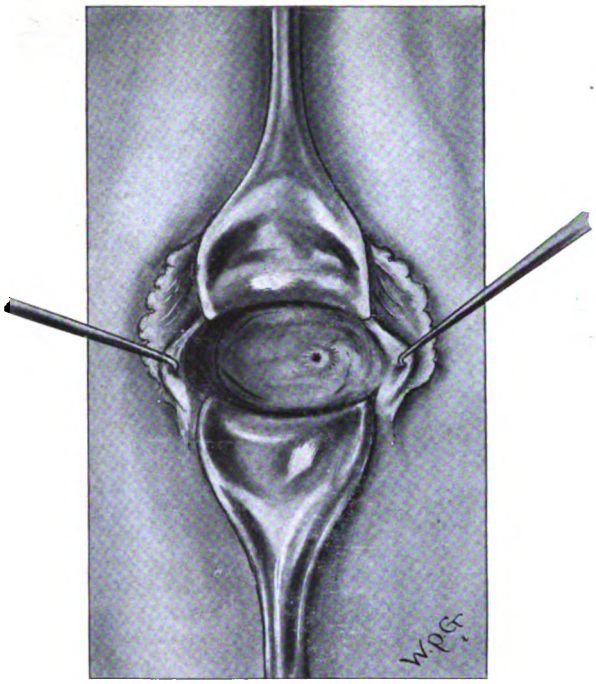


FIG. 1. Acquired atresia of the vagina showing pinhole opening where the septum had been incised for the relief of symptoms at the time of puberty.

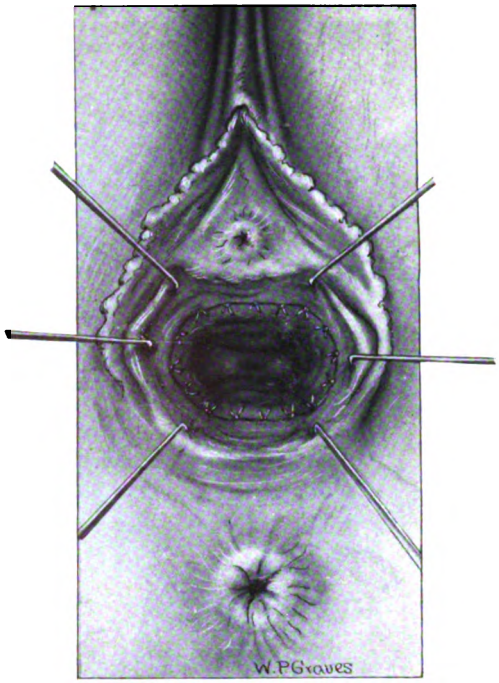


FIG. 2. Operation for acquired atresia of the vagina. The transverse septum has been dissected out, and the upper portion of the mucous membrane of the vagina united to the lower by interrupted catgut sutures.

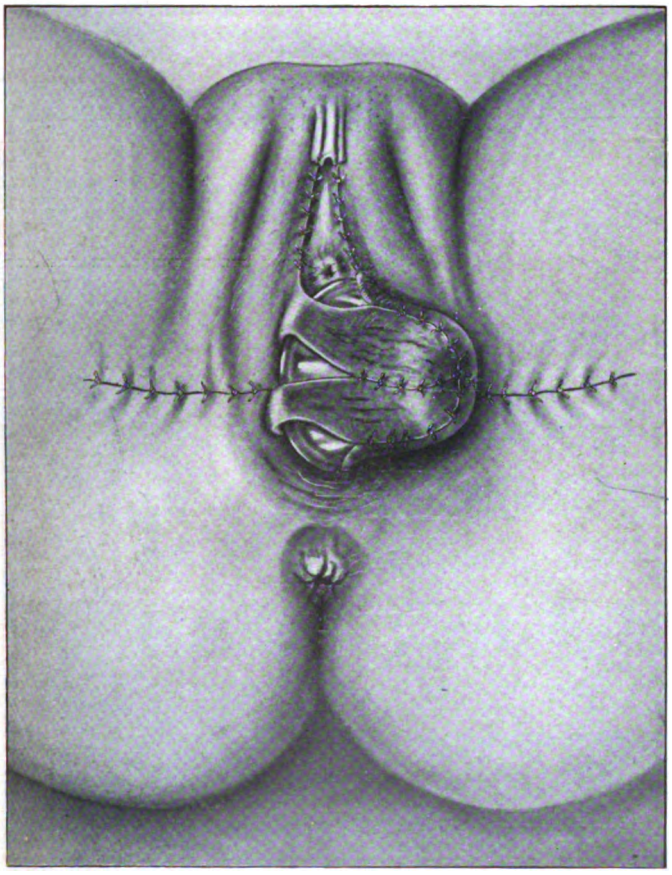

FIG. 3. Operation for congenital absence of the vagina. The four flaps taken from the labia minora and the thighs are approximated over a glass form. The wounds where the flaps were removed are represented as sewed up with interrupted sutures. The pouch made by the four flaps is turned into the opening previously made by separating the bladder from the rectum.

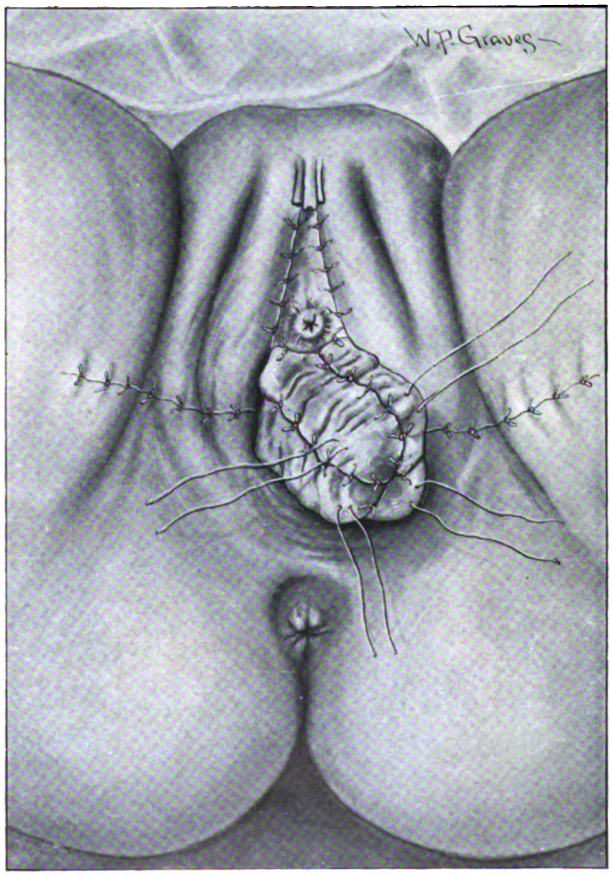


FIG. 4. Operation for congenital absence of vagina. The glass form has been removed and the seams of the pouch completely sewed. The untied sutures seen issuing from the pouch were previously passed through the vault of the artificial opening made between the bladder and rectum. The pouch is inverted into the artificial opening and the stitches tied so as to prevent any prolapse of the pouch before it heals to the raw surface of the opening.

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# Original Articles.

## OPERATIVE TREATMENT OF ATRESIA OF THE VAGINA.*

BY W. P. GRAVES, M.D., BOSTON.

ATRESIA of the vagina may be either acquired or congenital. The acquired form is by far the more common, being the result of an extensive adhesive vaginitis. Congenital atresia is due to defective embryological development and is always accompanied by other defects involving the genital organs.

### ACQUIRED ATRESIA OF THE VAGINA.

The majority of cases of this condition represent the end result of a long-continued plastic vaginitis usually gonorrheal in origin and acquired before the age of puberty. The vaginal mucous membrane of the adult is peculiarly resistant to the gonococcus, and is rarely infected excepting secondarily, and then not frequently. The delicate undeveloped vaginal mucous membrane in the child, on the other hand, is extremely susceptible to a gonococcal infection, which causes a peculiarly profuse purulent vaginitis and one that persists with much obstinacy. Such a vaginitis on healing has a great tendency to plastic adhesions of the vaginal walls. The most common situation for these adhesions to take place is at the junction of the anterior and middle third of the vagina where the two walls are normally in constant contact. In this way the vagina becomes completely occluded, and when menstruation is established the catamenial flow is obstructed and retained in the vaginal pouch behind the adhesion. As this accumulation increases each month, pressure is exerted on the cicatricial adhesion, and it is gradually stretched out into a well-marked membrane or diaphragm, which under sufficient pressure from behind may protrude from the vaginal orifice. Sometimes the anterior and posterior walls of the vagina may be completely glued together throughout the whole length of the vagina, a condition which is illustrated by Case 4 of this article. The plastic adhesion may take place at the orifice and cause atresia of the hymen, or the labia may be glued together and the vulva completely obliterated. Such conditions are due to the fact that, in all cases of purulent vaginitis in children, the vulva is involved, and is probably often the primary locus of infection, the epithelium of the vulva, like that of the vagina, being extremely susceptible to infection in children while very resistant in the adult. The present paper is confined to only those cases where the adhesion takes place in the vagina.

Acquired atresia of the vagina may also occur in adult women and may be the result of adhesions forming after a vaginitis following severe lacerations at childbirth. Adhesions from this cause usually occur much higher up in the vagina, and sometimes may include only the cervix, in which case atresia of the cervical canal results. Senile vaginitis is not an uncommon cause of atresia of the vagina, but does not usually give rise to serious trouble because of the absence of menstruation. It sometimes happens, however, that secretions may collect behind an atresia even in women who have passed the menopause, and such a condition is illustrated by Case 3.

When the atresia has been acquired in early childhood, symptoms do not ordinarily manifest themselves until the age of puberty, though Kelly reports the case of a child where a large amount of mucus accumulated behind the atresia, causing a considerable tumor and indicating the necessity for an operation. At puberty the menstrual blood accumulates in the vagina behind the adhesive membrane, distends it and makes a tumor. If the condition is not relieved, the accumulation of blood added to by each menstrual period gradually distends first the vagina and then the uterus, and a very large tumor occupying a considerable portion of the abdominal cavity may be formed. In severe cases, as in Case 4, a double hematosalpinx may form. The pain is at first periodic, but may become continuous as the tumor enlarges.

The operation for atresia is one that is attended with considerable danger of fatal sepsis, and every precaution should be taken to prevent infection. After evacuating the old menstrual blood, which is always of a thick tarry consistency, the cavities of the vagina and uterus should be most carefully irrigated. Where there is a definite membrane occluding the vagina, the method of operation is of extreme importance. Cases 1 and 2 illustrate well the results which may ensue after an operation which consists only of an incision in the occluding membrane and the evacuation of the contents. The opening made by such an incision sometimes closes up entirely, but more often results in one or more pinhole apertures through which the menstrual blood may partially flow. A certain amount of mucus and blood is dammed back into the vagina, becomes foully infected and produces the dire results seen in Cases 1 and 2. In order to leave the vagina in a permanently normal condition the occluding membrane should be completely dissected out and the wound edges approximated with great care. Such a wound will heal up by first intention even in the face of a badly septic discharge. The details of the operation for dissecting out an occluding membrane are as follows:

### OPERATION FOR ACQUIRED ATRESIA OF THE VAGINA.

After the septum has been incised and the contents of the space beyond have been removed, there should be a thorough cleansing of the parts. The edges of the septum should then be trimmed flush with the walls of the vagina. All scar tissue should be removed so as to prevent a future contraction. When the septum has been completely cleared away it will be found that there remains a denuded area which extends like a ring around the inner circumference of the vagina. The

* The drawings illustrating this article have been previously published in the *American Practice of Surgery*, vol. vi.

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mucous membrane of the upper portion of the vagina should then be drawn down and approximated to that of the lower portion by interrupted catgut sutures. Such an operation should restore perfectly the normal caliber of the vagina and should not be followed by a tendency to the development of a stricture. The use of antiseptic douches twice or three times daily should be begun the day after the operation and should be kept up until the discharge completely disappears.

The following are four cases of acquired atresia which have occurred in my experience.

Case 1. Mrs. A., age forty-five. Referred by Dr. Charles N. Cutler. Patient gave a history of a long-continued severe vaginitis at the age of ten, following an injury to the external genitals from falling astride a fence. At the time of puberty she had the usual symptoms of atresia, namely, great pain at the time for a monthly period, but without appearance of blood. She was operated upon, the operation apparently consisting of a puncture of the occluding membrane with an evacuation of the secretions. The patient was married at about the age of twenty-four. She menstruated regularly from the time of the operation, the menstrual flow being sometimes foul. When I saw the patient she was suffering from an extremely severe pruritus vulvæ. Examination showed a white leathery appearance of the external genitals which represented an early stage of the condition called kraurosis. Vaginal examination showed a well-developed membrane across the vagina situated at the junction of the outer and middle third. Through the membrane was a pinhole opening which doubtless represented the puncture which had been performed early in life. The patient had menstruated incompletely through this opening, and as the secretions, which were continuously partially dammed back by the occluding membrane, had become infected, a chronic pruritus had been caused by the irritating discharges. An operation was performed on the patient according to the method described above for acquired atresia, the contour of the vagina being entirely restored to its normal character. The condition of kraurosis, though relieved for a time, continued, however, to develop and necessitated a complete removal of the vulva, by which the patient was entirely cured.

Case 2. Miss L., age twenty-two. Referred by Dr. Charles N. Cutler. Patient had a history of early vaginitis, monthly pain without blood at the age of puberty, and an operation of puncture of the vaginal membrane with evacuation of contents of the vagina. The patient menstruated incompletely and had frequent discharges of such a foul nature that she was extremely offensive to people about her. Examination showed a condition exactly like that of Case 1, namely, a membrane at the junction of the middle and outer third of the vagina, with a pinhole opening through which exuded a purulent discharge of a nauseating odor. An operation was performed by the method described above, a large amount of bloody purulent material being evacuated from the upper portion of the vagina, which had been distended. The vaginal mucous membrane showed a condition of the most severe inflammation. The wound of the operation healed by first intention and the patient after a period of local treatment for the inflamed vaginal mucous membrane made a complete recovery.

Case 3. Mrs. M., age fifty-one. Referred by Dr. Charles N. Cutler. This patient had had several attacks of severe pelvic pain which were relieved after the sudden discharge of a large amount of mucopurulent matter. Examination of the patient showed that she had had a plastic vaginitis of the upper part of the vagina so that the cervix was entirely occluded. Pelvic examination showed that the patient also had evidences of an old pelvic inflammatory disease. The cervical canal was opened without ether, and after an unsuccessful attempt to keep the canal patent, I decided to perform an hysterectomy. The pelvis was found full of old adhesions. The pelvic organs were removed and the patient made a good recovery.

Case 4. Miss E., age fourteen. Previous to my seeing her this patient had had two operations for supposed congenital atresia of the vagina. She had the typical symptoms of atresia accompanying functionating pelvic organs. Examination showed occlusion of the vagina less than an inch from the introitus. Rectal examination showed a very large tender uterus with tubal masses on both sides of the pelvis. There were signs of a mild pelvic peritonitis, and the patient was running some temperature. At the operation the anterior and posterior walls of the vagina were found completely glued together and the surfaces were separated with considerable difficulty. When the vault of the vagina was reached, no signs of a cervix or of a cervical canal could be seen. The cervical canal was found after much trouble and the uterus was evacuated of a large amount of dark, semi-fluid material. The uterine cavity was thoroughly irrigated. An incision was then made in the median line of the abdomen and both tubes were found to be enormously distended with blood. There was some pelvic peritonitis. The tubes were removed and the pelvis was drained. This operation did not prove satisfactory as it was found impossible to keep the cervical canal patent. A glass-stem pessary was kept in the uterus several times for long periods. The pessary, however, kept up an inflammatory condition and the cervical canal each time closed up within a few days after its removal. The patient's condition finally became a serious one, and it was necessary to perform an hysterectomy, which was followed by a complete recovery. Although this case had been pronounced one of congenital atresia by several surgeons who had seen her, I have classified it as of the acquired type, as all the pelvic organs were perfectly normal. Although no history could be gained, this girl unquestionably had had a vaginitis in childhood which had caused a complete atresia of the whole length of the vagina.

### CONGENITAL ATRESIA.

Many cases of congenital atresia do not require operation because they are frequently associated with defective development, or partial absence of the internal pelvic organs, so that menstruation has not been established. It sometimes happens, however, that secondary sexual characters are normally developed, and operation for the purpose of coition is demanded by the patient. In other cases the internal pelvic organs may functionate normally, and it is important to establish an artificial vagina for the purpose of drainage. The establishment of a permanent artificial vagina is a matter of extreme difficulty, and only a few successful cases have been reported. The operation described in this article is based on successful operations by Burrage and Abbey, in which flaps were turned in from neighboring areas. One writer has been successful in grafting in the vaginal tissue removed from a case of cystocele. The following is the technic of the operation which I

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have devised for congenital atresia based on the operations of Burrage and Abbey, and which in the only case where I have had an opportunity to try it was successful.

The patient is placed in the perineal position. A superficial transverse incision is made just below the urethra. Through this transverse slit the bladder and rectum are slowly dissected apart with the finger. The forefinger of the left hand should be kept in the rectum, and some blunt instrument like a urethral dilator should be held in the bladder by an assistant. The dissection should be carried by the right forefinger, the left forefinger behind and the blunt instrument in front acting as guides to prevent tearing into the wall of the rectum or bladder. In this way an artificial opening can be made of the exact proportions of the normal vagina. Care should be exercised not to enter the abdominal cavity. The next step is to line this cavity with a pouch of skin made up of flaps turned in from the surrounding parts. To accomplish this, the two labia minora are dissected off, from above downward, in such a manner as to leave a pedicle sufficiently large to furnish good circulation. The two surfaces are then split apart so that two paddle-shaped flaps remain. There should then be dissected from the inner side of the thigh two similar flaps which have their bases at the two lower corners of the artificial opening. All four flaps are then sewed together over a glass form, as shown in the cut (Fig. 4). Before the flaps are sewed together several catgut sutures, with the ends left long, should be placed in the vault of the artificial cavity. When the skin pouch has been nearly completed, the glass form is removed and the catgut sutures are brought out through the skin pouch. The pouch is then inverted and the sutures are tied in such a manner that the pouch fits snugly into the artificial cavity.

The history of the case in which the preceding operation was successfully performed follows:

Miss M., age twenty-seven, was a young woman of apparently normal development and attractive appearance. She gave a history of never having menstruated. She had had normal sexual feelings and was engaged to be married. Examination showed normal development of breasts, hips and external genitals. Further examination revealed complete absence of the vagina, there not even being a dimple to indicate the introitus. By rectal examination no sign of uterus or ovaries could be felt.

The operation described above was performed, and the pouch formed by the turned-in flaps from the labia minora and from the thigh healed by first intention with the exception of a small area in the vault, and a permanent functionating vagina was established.

## CANCER OF THE SCROTUM.

BY ROBERT M. GREEN, M.D., BOSTON.

Cancer of the scrotum, or chimneysweep's disease, was apparently first described as a pathologic entity in 1775 by Percivall Pott. In a pamphlet, or Chirurgical Observation, entitled "Cancer Scroti," he writes of it as follows:

"There is a disease peculiar to a certain set of people, which has not, at least to my knowledge, been publickly noticed; I mean the chimney-sweeper's cancer.

"It is a disease which always makes its first attack on, and its first appearance in, the inferior part of the scrotum, where it produces a superficial, painful, ragged, ill-looking sore, with hard and rising edges; the trade call it the soot-wart. I never saw it under the age of puberty, which is, I suppose, one reason why it is generally taken, both by patient and surgeon, for venereal, and, being treated with mercurials, is thereby soon and much exasperated; in no great length of time, it pervades the skin, dartos and membranes of the scrotum, and seizes the testicle, which it enlarges, hardens and renders truly and thoroughly distempered; from whence it makes its way up the spermatic process into the abdomen, most frequently indurating and spoiling the inguinal glands. When arrived within the abdomen, it affects some of the viscera, and then very soon becomes painfully destructive.

"The fate of these people seems singularly hard; in their early infancy they are most frequently treated with great brutality, and almost starved with cold and hunger; they are thrust up narrow and sometimes hot chimnies, where they are bruised, burned and almost suffocated; and when they get to puberty, become peculiarly liable to a most noisome, painful and fatal disease.

"Of this last circumstance there is not the least doubt, though perhaps it may not have been sufficiently attended to, to make it generally known. Other people have cancers of the same parts; and so have others beside lead-workers the Poictou colic and the consequent paralysis; but it is nevertheless a disease to which they are peculiarly liable; and so are chimneysweepers to the cancer of the scrotum and testicles.

"If there be any chance of putting a stop to or preventing this mischief, it must be by the immediate removal of the part affected, — I mean that part of the scrotum where the sore is, — for if it be suffered to remain until the virus has seized the testicle, it is generally too late even for castration. I have many times made the experiment, but though the sores, after such operation, have, in some instances, healed kindly, and the patients have gone from the hospital seemingly well, yet in the space of a few months it has generally happened that they have returned either with the same disease in the other testicle, or in the glands of the groin, or with such wan complexions, such pale, leaden countenances, such a total loss of strength, and such frequent and acute internal pains, as have sufficiently proved a diseased state of some of the viscera, and which have soon been followed by a painful death.

"If extirpation ever bids fair for the cure of a cancer, it seems to be in this case; but then the operation should be immediate, and before the habit is tainted. The disease, in these people, seems to derive its origin from a lodgement of soot in the rugæ of the scrotum, and at first not to be a disease of the habit. In other cases of a

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cancerous nature, in which the habit is too frequently concerned, we have not often so fair a prospect of success by the removal of the distempered part, and are obliged to be content with means which I wish I could say were truly palliative; but here the subjects are young; in general in good health, at least at first; the disease brought on them by their occupation, and in all probability local, which last circumstance may, I think, be fairly presumed from its always seizing the same part: all this makes it (at first) a very different case from a cancer which appears in an elderly man, whose fluids are become acrimonious from time as well as other causes; or from the same kind of complaint in women who have ceased to menstruate. But be all this as it may, the scrotum is no vital organ, nor can the loss of a part of it ever be attended with any, the smallest degree of inconvenience; and if a life can be preserved by the removal of all that portion that is distempered, it will be a very good and easy composition, for when the disease has got head, it is rapid in its progress, painful in all its attacks and most certainly destructive in its event."

This passage has become a classic description of the disease, as vivid as it is accurate. Even before Pott's time, cases, evidently cancer of the scrotum, had been reported, by Bassius in 1731, and by Treyling in 1740. But it remained for the great English surgeon to name the condition and discuss its character as an occupation-disease, which has so closely connected it with his own city, London, the home of chimneysweeps.

Following Pott's article, the disease was generally recognized, and cases of it began to be reported from time to time. Everywhere it was regarded as an English disease, and its etiologic connection with chimneysweeping was unquestioned. Thus in 1835, James Syme, of Edinburgh, writes:

"Though this disease would seem to be not uncommon in London and other large towns, it is never met with in Edinburgh, except in persons who have begun to suffer from it elsewhere; and it is accordingly so rare here that during the whole period of my connection with the Infirmary, as student and surgeon, I have not seen an instance of it either there or in private. This immunity of the trade in Edinburgh from a complaint which constitutes a serious scourge to it in other places, seems at first sight easily accounted for by the mode of sweeping chimneys here, which is effected not by climbing boys, except in the case of some very few particularly constructed vents, but by letting down from the top a broom, to which a weight is attached, and which, being then alternately drawn up and allowed to descend, completely attains the object in view. But boys seldom climb after the age of puberty, as they then become too large for the purpose; while, according to Mr. Pott and other practical writers, the disease is hardly ever observed at an earlier period of life, and usually occurs at a much later one. The theory of the men themselves is, that the body, from being saturated or poisoned, as they express it, by the large quantities of soot they are forced to swallow in their youth, acquires a predisposition to the disease, which, however, seldom actually appears until about the middle period of life." In the case which he reports, however, the patient, "from being of small stature, and extremely thin wiry make, has never abandoned the practice of climbing, boasting that an aperture twelve inches by nine inches is quite sufficient for his passage. He became an apprentice at five years of age in London, and remained there sixteen years, afterwards having no settled residence, but traveling about from place to place."

The attribution of the disease to the swallowing of soot was, of course, a popular fallacy, in which Syme doubtless did not share. A more reasonable theory of its causation had indeed already been stated in 1808 by Sir James Earle, in his second edition of "The Chirurgical Works of Percivall Pott." In a footnote to the article on cancer of the scrotum, he says:

"From the soot being collected and remaining in the moist rugæ of the scrotum, it is not difficult to conceive why the disease should generally begin in that part; but I have seen the true soot-wart in the face of a chimneysweeper, just under the left eye, who had never suffered from the disease in any other part, though he said he had sometimes felt little hardnesses in the scrotum, which, when they grew troublesome, he picked off; but he had never perceived any sore, ulceration or considerable hardness in that part." And in a later note, he continues: "This species of cancer, which Mr. Pott has so accurately described, appears to be produced by some peculiar acrimonious quality in soot, when incorporated and fermenting on the skin of some persons whose constitutions are disposed to undergo a certain change, or receive a new modification of their inherent properties. As chimneysweepers are in the constant habit of being in contact with soot, it follows that they must be most liable to a disease which is evidently caused by it; but, as was before observed, those only whose constitutions are disposed to receive the poison are infected, not one in many hundreds being injured by it. Mr. Pott seemed to suppose that this species of cancer was peculiar to chimneysweepers, but I have strong grounds for thinking that he was mistaken in that idea. There are instances, though I believe them to be very rare (as I know no one, either author or practitioner, who has noticed them), yet there are instances of other persons being infected by the contact or effluvia of soot; and as a caution for every one to be careful of handling it, or in any way being exposed to its action, I will relate the case of a man who was attacked with this dreadful disease to a most lamentable degree and was brought into the hospital. The scrotum and testes, with the spermatic cords, together with the glands in the groin, were included in a large phagedenic ulcer. The nature of the disease was so marked and evident that I took for granted that he was a chimneysweeper, and was much surprised to find that his business was quite of another kind. I could not, however, avoid repeatedly asking him if he had ever had any thing to do with sweeping chimneys; he

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FIG. 1.

Cancer of the scrotum. (Case IV.)

FIG. 2.

Cancer of the scrotum. *a*. Cancer tissue. *b*. Zone of fibrous thickening and round cell infiltration. *c*. Normal underlying tissue.

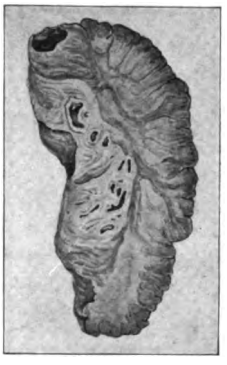

FIG. 3.

Cancer of the scrotum. (From specimen in the Warren Museum, Harvard Medical School.)

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assured me not. Some time after he told me that, on considering the questions which I had so often urged, he recollected that not many years before he had lodged at the house of a chimneysweeper, in the apartments of which soot-bags and soot were deposited. He did not appear very accurate in his account, but thought on recollection that the complaint began in the scrotum soon after he left the chimneysweeper's house. This goes merely to prove that soot in substance, or perhaps the volatile parts of it, have the power of producing the disease; and not anything peculiar to the occupation or manner of life to which chimney-sweepers are subject. Probably the man's body, or his linen, were liable to be daubed with soot, or the dust arising from it; and the scrotum was first affected, as it is among chimneysweepers, for the reason before given: that of the moist rugæ retaining the poison more readily than other parts."

Sir James Earle's son Henry, assistant surgeon to St. Bartholomew's, and surgeon to the Foundling Hospital, writes (Med-Chir. Trans., xii, 297):

"The disease . . . is invariably produced by the irritation of the soot applied to the rugæ of the skin. The characters of the complaint are peculiar, commencing in a warty excrescence which in some cases will remain nearly stationary for several months, or even years. After a time the excrescence discharges a thin acrimonious ichor, which excoriates the surrounding skin. Ulceration now takes place in the center, and the edges of the wound become everted and throw out a luxuriant growth, with schirrous hardness, which discharges a very fetid irritating matter. The most common situation for this complaint is the lower part of the scrotum; but this rule is not without exceptions. . . . As the disease advances, the parts immediately contiguous become affected; it spreads downwards to the perineum, and if not arrested will include the whole scrotum; at the same time it not infrequently extends itself to one or both testicles. When the testicle is first affected, it becomes firmly connected with the diseased scrotum; it enlarges and becomes greatly indurated; ulceration and sometimes sloughing then take place, leaving a deep excavated ulcer that penetrates into the body of the testis, which does not appear disposed to the formation of fungous growth, similar to what occurs when the scrotum is the seat of the disease. The same observation applies when the complaint has extended itself to the inguinal glands; its progress in glandular structures appears to be more rapidly destructive without the slightest effort at reparation. The disease, in every instance that I have seen, except one, extended itself to the parts immediately contiguous. The inguinal glands are often enlarged, but they will generally subside on the removal of the diseased scrotum, clearly proving that the disease is not commonly communicated in the course of the absorbents. This is a very important feature in the complaint and one which most materially influences the prognosis and treatment. . . . Even where the testicle is affected, the disease is confined, for a time, to that gland, but it subsequently extends itself up the spermatic cord into the cavity of the abdomen, where it proves rapidly destructive. Not only is the discharge from the sore very fetid, but the perspiration from the whole body, which is generally copious, has a very peculiar ammoniacal odor, which cannot be mistaken when once recognized. . . .

". . . The rare occurrence of this complaint may be referred to another cause, namely, there are strong reasons for presuming that a constitutional predisposition is required, which renders the individual susceptible to the action of the soot. If this was not the case, and if there was anything of a very acrimonious nature in soot, would it not more frequently affect the children, whose skins are far more delicate, and who are much more exposed to its constant application? Among those who have been affected, and who have fallen under my observation, several had been employed in the trade for above twenty years before they became affected, and it is more reasonable to conclude that some alteration had taken place in their constitutions which rendered them susceptible of the irritation than that it was the immediate result of any peculiar quality in the soot. This opinion is much confirmed by instances in which different branches of the same family have been subject to the disease at a particular period of their lives. In some instances, two or three generations have fallen victims to the ravages of this disease, for the business is so lucrative that they are unwilling to abandon it. . . .

". . . As far as my observation goes, no topical applications or internal remedies have the slightest influence over the disease. The scalpel is the only resource, and that may be resorted to with the most confident expectation of success provided the whole of the diseased mass can be removed. Even where the inguinal glands are enlarged, this ought to be attempted. . . . Where the testicle is affected, provided the spermatic cord has not participated, it will be right to give the patient the chance of recovery rather than abandon him to a miserable and painful death. . . .

". . . It may appear rather an anomaly to affirm that a certain state of constitution is required for the production of this disease, and at the same time to advocate its locality, yet such are the conclusions which numerous facts appear to warrant, and I feel quite confident of being able to eradicate the complaint by a complete removal of the diseased portion, and the subsequent abandonment of the occupation of a sweep. As the disease is sometimes rapid in its progress, no time should be lost in making useless trials of remedies, but the operation should be at once and extensively performed."

In 1832, Travers writes (in Med.-Chir. Trans., xvii, 344):

"I may here shortly notice the cancer scroti, or chimneysweepers' cancer, which is a peculiar form of malignant ulceration, more truly local than any in its origin. But although it is impossible

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to disconnect the origin of this sore and the occupation of the patient, how seldom have we seen the boys so much employed in this trade the subjects of it; their wounds and excoriations show no tendency averse to healing. The soot irritates in the adult to the formation of a hard pimple, which passes slowly through the stages of suppuration and scabbing to ulceration. The edge is hard and gibbous and everted, the surface of an ochre-red hue. The disease resembles the lupus of the cheek and eyelids in destroying the skin and cellular texture, leaving the testicles and ligamentous covering of the crura penis, as that does the sclerotic, bare and wasted, but otherwise uninjured. This sore has no tendency to slough or penetrate deeply by ulceration. The lymphatic glands are rarely and seldom specifically affected. The disease returns after extensive removal. . . . The patient dies hertic, tabid and commonly exhibits pulmonary tubercles, or the small white tubercle of scrofula on the serous membrane, either of the chest or abdomen. I am very doubtful of its identity with scirrhous cancer. The natural secretion, confined by the soot, which obstructs the sebaceous follicles and exhalant orifices, becomes an irritant and gives occasion to the inflammation, but the age and perhaps the habits predispose to the malignant character, which renders it incurable and ultimately fatal. The disease is of very variable activity, sometimes occupying years in its progress."

Sir Astley Cooper, in his "Observations on the Structure and Diseases of the Testis," London, 1830, says of the chimneysweeper's cancer:

"This disease has always appeared to me to be one of the most curious to which the human body is liable. The person who is brought up as a chimneysweeper, besides being exposed in his childhood to the horrors and apprehension of climbing to dangerous and giddy heights, in his boyhood suffering great cruelty and severe deprivations, and in his manhood being almost an alien from society, is liable to a disease which is altogether the produce of the loathsome pursuit in which he is engaged.

"The soot, to the application of which he is constantly exposed, harboring in the wrinkles of the skin, where the cuticle is thin and the cutis is highly vascular, produces in many of these persons an irritation, followed by an ulceration, which bears so strong a resemblance to cancer as to have received that appellation, and it certainly strongly resembles cancer of the lip in several of its circumstances.

"This disease I have only seen in two parts of the body, viz., upon the scrotum and upon the cheek. On the former it is very frequent; in the latter I have only seen it in two instances. In the first, the sore was seated in the center of the cheek, in a very old man, whose face was wrinkled from age, and, therefore, liable to retain a quantity of soot, which irritated and wrinkled in the skin until it produced the symptoms I shall directly describe. In the second case, the disease began on the cheek, near the angle of the mouth, and it extended both to the upper and under lip. . . .

"The first appearance of the disease is in a wart upon the scrotum, which appears broken upon its surface. Upon this wart an incrustation forms, and continues to cover the surface. If this incrustation be rubbed away, or picked off, the papillæ on the surface of the wart appear excoriated, red and broken and issue a slight discharge upon the surface. An incrustation again appears upon the wart, which remains until accident or the progress of ulceration remove it, and then the surface appears highly vascular and discharges a bloody serum. Still the surface becomes encrusted, until at length an ulcer of some extent forms under it. When the sore is carefully examined, it will be found hard, its edges indurated and everted, and its surface unequally vascular, so that it is yellow in some parts, red and vascular in others. It discharges a bloody serum, the smell of which is often very offensive, but still a purulent discharge is sometimes observed.

"At first the person complains more of a troublesome itching than of pain, but as the disease advances, darting pinching pain, with heat, shoots through the part, as in most other diseases of specific nature. As the ulcer proceeds, it even reaches the tunica vaginalis, hardens it and affects the surface of the testis. After the disease has extensively ulcerated, the absorbent glands in the groin become affected, one or more being hard and swollen; it inflames, is poulticed and fomented, and it breaks, discharging a bloody serum with some pus. These glands proceed slowly, ulcerating with a hardened surface and with everted edges, discharging serum from some parts of the surface, and a curd-like matter, or white sloughs, from others. At length a deep chasm is formed in the groin by ulceration; in others, an extensive sore; in the former case, the femoral vessels, or a large branch of them, are exposed and ulcerated, so as to destroy by free and sudden hemorrhage; in the latter, the patient is slowly exhausted by irritation, restlessness and discharge. The scrotum is in some cases nearly destroyed by ulceration.

"Upon dissection of the parts removed in the operation . . . it will be found . . . that the surface of the cellular membrane surrounding the ulcer is filled with a white scirrhous substance very little vascular, affording very much the same appearance as a similar incision into a cancer of the lip. When the glands in the groin are examined, they are found to be altered from their natural appearance and are enlarged and hardened, containing a white solid in some parts, a soft, white, curd-like matter in others; high vascularity in some parts and entire absence of it in others. I have known this disease occur at various ages from twenty-six to eighty years.

"From the number of persons who pursue this occupation, and the comparatively few affected by the application of soot, it would appear that there is something, either in the constitution or the parts of some individuals, which disposes to its production. I am inclined to believe that it depends more upon local circumstances than upon

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the constitution. . . . I believe that it is a thin cuticle and an irritable skin, which permit the soot to produce its peculiar irritation and effusion; and that it spreads both by simple extension of surface and by the irritation of the absorbent glands.

"Medicine has no power over this disease, at least not any that I have tried; and all local applications, used with a view directly to heal the part, are of no avail.

"It admits only of two modes of procedure — the one to destroy it by sloughing; the other to remove it by excision.

"A dram of the oxide of arsenic, well mixed with one ounce of the ceratum cetacii, is to be thickly spread upon lint and applied upon the sore, upon which it is to remain for twelve hours, and is to be succeeded by a poultice. A slough is produced by the arsenic, which separates in a few days and a healthy surface succeeds; but if at any part the old and malignant leaven appear, the arsenic must be again applied until an entirely new surface be produced. If the glands be enlarged or hardened, the above application will increase them, and it ought not to be used. If the disease be removed by the knife, the operation is a simple piece of dissection. Enlarged glands in the groin are not to positively forbid the operation as they are sometimes increased from simple irritation only; and as the removal of a portion of the scrotum is little painful, soon performed and unattended with danger, the patient should have this chance of recovery given him.

". . . After the removal of the diseased portion of the scrotum, the vessels are, although small, apt to bleed profusely and to be with difficulty stopped by pressure; it is, therefore, desirable to secure every small vessel which bleeds freely, and not to apply any dressing upon the part, or to suffer the patient to get into bed; but he should be kept cool, and in the recumbent posture, as the scrotum will be then contracted. When the bleeding has ceased, the edges of the wound may be brought together by sutures."

The use of arsenic in the treatment of epithelioma is well-known, for it is a principal ingredient of the common "cancer-pastes." Singularly enough, arsenic has been also supposed to produce a condition analogous to chimneysweeps' disease. In an interesting work entitled "Pharmacologia," published in New York in 1822, Paris writes as follows (p. 208) of the local irritant effects of arsenic:

"The poisonous effects of arsenious acid are so amply detailed in medical works that it would be superfluous to dwell upon them; it may, however, be interesting and useful to record an account of the pernicious influence of arsenical fumes upon organized beings, as I have been enabled to ascertain in the copper-smelting works of Cornwall and Wales; this influence is very apparent in the condition both of the animals and vegetables in the vicinity; horses and cows commonly lose their hoofs, and the latter are often to be seen in the neighboring pastures crawling on their knees and not infrequently suffering from a cancerous affection in their rumps. . . . It deserves notice that the smelters are occasionally affected with a cancerous disease in the scrotum similar to that which infests chimneysweepers, and it is singular that Stahl, in describing the putrescent tendency in the bodies of those who die from this poison, mentions in particular the gangrenous appearance of these parts. . . . As an external application, arsenic has long been extolled in the cure of cancers."

Bell, in an article on "Paraffin Epithelioma of the Scrotum," in *Edinburgh Medical Jaurnal*, xxii, 135, says:

"The name, 'chimneysweep's cancer,' is an admissible one, from old associations and long usage. 'Scrotal soot cancer,' though it implies a theory, has never been so much adopted. By these names, surgeons describe a disease of the nature of epithelioma, attacking first, as a local disease, the scrotum, yet, if left, apt, by infecting the glands, to poison the system, though, at its outset, it is merely a result of a local specific irritation. *Local*, because its seat of election seems to depend simply on the difficulty of cleansing the soot stains from the rugæ of the pendulous and mobile scrotum. *Specific*, because it seems to result from the contact only of certain varieties of soot — coal, not wood, even of coal soot, from English rather than Scotch coal.

"Chimneysweep's cancer is now a disease of comparative rarity. This is explained by the legislation against climbing boys, and invariable use of brushes and other mechanical appliances.

"But, if chimneysweep's cancer is rare, and becoming rarer every year, I believe we are to find a successor for it in a malady affecting the laborers exposed to the fumes of paraffin in shale works. Of this disease, — epithelioma of the scrotum, ascribed by patients to paraffin fumes and contact with the oil, — I have seen two cases within the last eighteen months."

*(To be continued.)*

## CLINICAL AND BACTERIOLOGICAL RESEARCHES ON MIKULICZ'S METHOD OF RENDERING THE PERITONEUM RESISTANT TO SURGICAL INFECTIONS.

BY PROF. E. DE PAOLI, M.D.,
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The author believes that Mikulicz's method should be practised by surgeons who are about to perform celiotomy for lesions in which there has been an external cause as well as those in which the disease has originated within the peritoneal cavity, in both of which there is danger of infection of the peritoneum following abdominal section.

The author has practised this method in all cases in which celiotomy has been performed, and since the time when he first began to use it his results, which previously had not been perfectly satisfactory, have been much better. Septic

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peritonitis has practically disappeared from his wards in spite of the fact that there is no isolation of septic cases, and also that his patients usually delay a long time before deciding to submit to an operation. The author has at present a series of 155 cases of celiotomy, in which a preventive injection had been given before operation, with but a single death from septic peritonitis. Such a series is quite exceptional in his experience, which has now extended over a period of many years. The immunizing injection of nucleinate of sodium offers, in addition, this advantage, in that it serves to measure with precision the natural powers of resistance of the patient who is about to be operated upon. If after the injection there is a satisfactory hyperleucocytosis this is the proof that the powers of resistance are sufficient; if, on the contrary, hyperleucocytosis does not follow injection of the drug, we know that the means of defense against infection are decidedly lowered. In the first case we may operate with confidence; in the second, we should abstain from operating, if possible, until the patient is in a better condition. In the first trials of the drug by Miyath and Renner disagreeable sequelæ followed the administration, such as local pain, often very severe, nausea and vomiting, general depression, chills, more or less fever, and sometimes toxic symptoms which gave rise to considerable anxiety. These effects were always transitory and invariably passed away at the end of a few hours, but they frightened surgeon and patient alike on the eve of a serious operation. It is probable that these disagreeable sequelæ have prevented the vulgarization of Mikulicz's method. These unfavorable symptoms can be rendered much less severe by substituting for the nucleinate of sodium employed by Mikulicz a preparation from which all the free albumen has been removed, that is to say, by using a salt of nucleinic acid which is neutral, anhydrous and perfectly pure. It is also preferable to give the injection thirty-six to forty-eight hours before the operation instead of ten hours before; in this way the disagreeable effects will have passed by and will not have an unfavorable influence on the intervention. One should not give the large doses advised by Renner when about to operate for appendicitis in either the acute or the chronic forms, cholecystitis, simple or calculous, and tuberculosis; in these diseases the general reaction after the injection is often intense, and there is also frequently in these conditions a spontaneous hyperleucocytosis.

Bacteriologic studies of the blood of patients before and after the injection of nucleinate of sodium have shown an increase in the bactericidal power of the blood serum with reference to the culture of the bacterium coli. This result is very remarkable because it serves to show how the drug must act in protecting the peritoneum against the germ very commonly found in septic peritonitis. This increase in the bactericidal power of the serum after the injection has not been observed with the staphylococcus pyogenes. Perhaps bacteriotropic substances are formed which are somewhat different from bactericidal substances. Future investigations must clear up this obscurity.

The blood of patients who have received the injection shows constantly a diminution in its viscidity which depends upon the fewer red blood globules and hemoglobine; the injection, therefore, immediately causes hemolysis. This must be borne in mind.

An ideal kemotatic substance should produce a good hyperleucocytosis and should tend to immunize the peritoneum against infection without detriment to the patient. Nucleinate of sodium freed of its albumen approaches this ideal without quite reaching it. We should, therefore, employ Mikulicz's method when there is danger of operatory infection, at the same time bearing in mind that it does not give absolute immunization, but that it merely strengthens the natural resisting powers of the peritoneum against infection.

Nucleinate of sodium without albumen is prepared by Boehringer & Son, of Mannheim. The dose is 1 gm. or 75 cgm. or 50 cgm., dissolved in artificial serum sterilized by boiling. The injection is given in the gluteal region or in the anterior part of the thorax in the subcutaneous tissue. There is no danger in its use.

The hyperleucocytosis usually does not exceed double the number of white corpuscles in the blood which were present before the injection was given. Sometimes the hyperleucocytosis is more marked, but this has no unfavorable significance.

The method finds its chief application in cases in which there is danger of post-operative sepsis, as in operations on the intestinal tract, and also in those cases in which the conditions for perfect asepsis are lacking, for instance, when one cannot operate in a well-appointed hospital. It is probable that the method will not prove of great advantage in those cases in which the abdominal lesion is not in the digestive tract, provided always that asepsis is perfect; in these cases, of course, sepsis is quite unusual in any event.

## THE TECHNIC OF ARTHROTOMY. A REPORT UPON AND DISCUSSION OF ONE HUNDRED AND NINETY-EIGHT CASES.

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(From the Orthopedic Clinic of the Carney Hospital.)

[Continued from No. 19, p. 730.]

### INFECTIOUS ARTHRITIS.

(Female cases.)

CASE 139. J. D., female, twenty, single. Atrophic arthritis. Operation, Aug. 10, 1904.

An incision made over inner side left knee. Capsule of yellowish-blue color and moderately tense. Periarticular tissue very vascular, as in the previous case. Considerable greenish, turbid fluid containing whitish flakes was evacuated. Synovia injected and covered numerous pedunculated outgrowths, one of which was much larger than the rest. Capsule covered with

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papillomata. When knee was flexed, the inner, anterior surface of inner condyle showed thinned cartilage, the early stage of an erosion with a definite injection about the center of the area. Edge of cartilage sharp, differing from rest of same in appearance. Papillomata excised and small portion of eroded cartilage removed for pathological examination. Thorough irrigation.

Aug. 18. Stitches removed, wound clean. Fifty degrees of motion in flexion obtained without pain.

Aug. 22. Discharged.

Sept. 2. Knee well.

March 15, 1905. Peroneal spasm in addition to above deformity. General condition improved.

June 29, 1906. Considerable villous thickening of both hands. Left knee shows more thickening and crepitation elicited on motion.

March 26, 1907. Re-entered House.

March 29. Operation.

Incision 3 inches long over outer aspect of right knee, considerable soft material and small fringes removed. Cartilage eroded. No excess of fluid. Pannus over tibial condyle. Wound closed. Hamstrings of left knee were divided by open incision. Plaster from ankle to groin.

April 20. Cast split, to be worn only at night.

April 26. No flexion of knees. Motions are not improved. Discharged home.

Dec. 2, 1908. Joints have improved in function and physical condition.

The knees and all joints except the feet were restored to a condition of usefulness. The feet were lame and sore.

In type, this case was very like the one immediately preceding it, but the result has been very different. It seems to us that probably the explanation of this lies in the fact that the early arthrotomies in this case got rid of the eroding pannus and, therefore, more of the cartilage was preserved.

Case 140. L. T., female, thirty-three, single. Infectious arthritis, metatarso-phalangeal joint, second, left. Operation, Jan. 22, 1904.

Incision 2.5 cm. long over dorsal surface of second left metatarsophalangeal joint. A small purple mass size of pea found overlying articulation. It was boggy with smooth lobulated surface seeming to spring from periosteum on either side of joint. When removed the dorsal surface and sides of the two bones were bared. Periosteum stripped off leaving a rough, pitted bony surface. Tissue removed was evidently the chronic inflamed capsular ligament and synovial membrane. Articular cartilage showed some loss of luster, but no erosion or striation. Head of phalanx (5 cm. excised) and slightly larger portion of metatarsal removed. Plaster cast applied.

Jan. 29. Wound healed. No pain. Discharged.

Jan. 8, 1906. Patient has had similar condition in knee and other joints in same row with above metatarso-phalangeal articulation. Not operated.

Case 141. N. H., female, fifty-five. Operation, Nov. 24, 1909.

Left knee opened by linear incision over inner side. A large amount of thick, yellowish, organized fibrinous material taken out with gauze as curette, some of which was adherent and some loose in the joint. Tincture of iodine applied, then salt solution.

Nov. 28. Patient has been very comfortable since operation.

Dec. 8. Right knee opened on outer side. Material of same nature removed, but less in amount.

Dec. 19. Patient discharged. Motions normal in both knees.

Case 142. A. C., female, twenty-three, single. Operation, Aug. 4, 1909.

Right knee opened on inner side. Capsule of joint thickened and joint contained flocculent, thick fluid and large quantity of organized fibrin, which was broken up with fingers and washed out with salt solution. Entire joint surface curetted with gauze. Posterior wire splint applied.

Aug. 17. Patient has about 35° motion in knee.

Aug. 18. Under ether about 4 oz. of sterile oil was injected under patella and knee flexed to right angle.

Aug. 23. Discharged. Condition very much improved.

Sept. 22. Patella slightly movable. Leg in 15° permanent flexion. Advised baking and massage. Measured for light caliper splint with bend at knee and knee cap.

Case 143. T. H., female, nineteen, single. Operation, Aug. 6, 1909.

Incision made over both outer and inner sides of left knee. Large amount of flocculent material evacuated, also considerable amount of hemorrhagic substance. Joint flushed out with hot salt solution. Posterior wire splint.

Aug. 26. Discharged. Condition relieved.

Nov. 4. Re-admitted to House and oil injection followed by manipulation.

Dec. 17. Voluntary flexion to a right angle. Good operative result. Continue baking and massage. Patella fairly movable, slight capsular thickening only remains.

Case 144. T. T. M., male, twenty-two, single. Infectious arthritis. Operation, Nov. 14, 1904.

Right ankle-joint opened by linear incision 1.5 cm. below internal malleolus. Capsule thick. A small portion was excised and joint again opened by incision below external malleolus. Capsule was less thick on this surface of the joint. A deep-seated varicosity was found but not removed. Wounds closed and foot put up in plaster cast.

Nov. 23. Discharged.

March 15, 1905. Re-entered hospital and spur removed from neck of astragalus; similar exostosis removed from tip of malleolar process of fibula.

March 24. Discharged wearing plaster cast.

Case 145. J. D., female, twenty-three, single. Villous arthritis, wrist. Operation, Dec. 2, 1903.

Longitudinal incision 4 cm. over ulnar side of dorsum of left carpus, beginning opposite styloid process of ulna between tendons of flexor carpi ulnarius and the digital flexor tendons. Synovial sac in view when tendons were retracted contained moderate excess of clear serum. The synovial surface presented multiple tiny villous projections (0.1—0.5 cm. long). These were removed, followed by considerable oozing. Similar incision on radial side dorsum of carpus, inside flexor tendon of thumb. Similar condition of synovia found and treated as above.

Right hand operated upon as above except that radial side was not opened as less swelling was present, but all the synovial surface was curetted from one joint opening.

Wooden splints from elbow to finger tips.

Dec. 9. Stitches removed, wounds clean.

Dec. 12. Discharged. No pain on tentative motion.

Jan. 6, 1904. Flexion of right wrist one third normal; left, one half normal.

Aug. 4, 1904. Referred to Zander room.

Case 146. H. F., male, thirty-one, single. Villous arthritis. Charcot's arthropathy. Operation, Sept. 6, 1907.

Incision over outer upper quadrant of right knee. Capsule moderately vascular. Synovial capsule gray in color, thickened and villous on inner side. Large thick villi are present, especially in the upper outer

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portion of the quadriceps pouch and along the margins of the femoral condyle. Excess of fluid, thin and turbid, containing few shredded fibrinous clots closely adherent to the villi. No erosion felt through incision. Wound closed.

Patient has other infectious lesions in spine and ankle.

Sept. 13. Discharged improved to Out-Patient Department.

Sept. 30. Less swelling in knee. Some serous discharge from site of seton left in at operation.

Oct. 23. Some lateral motion in knee. Signs of tabes dorsalis, and in the course of time the joint became completely disorganized after the usual manner in Charcot's joints.

Apparatus was worn for quite a time, and now (1910) the patient has sufficiently good function to tend a drawbridge.

Case 147. M. C., female, twenty-eight, single. Villous arthritis of right ankle. Operation, July 12, 1905.

An inch and a half incision was made just below external malleolus parallel with the foot. Blunt dissection to astragalo-cuboid articulation. Dark red fringes were seen exuding from the joint. When removed an excess of fluid was evacuated. Another incision made over similar location on foot below internal malleolus, and a similar condition was found in the astragalo-scaphoid articulation.

July 20. Considerable swelling of ankle. Bier treatment instituted.

July 23. Discharged.

Case 148. B. B., female, twenty-two, single. Tuberculosis, ulnar radial joint. Partial excision. Operation, Dec. 27, 1907.

Incision 8 cm. in length over external condyle right elbow. External portion of capsule protruded slightly. Rotation of radial head accompanied by coarse crepitus and head of bone enlarged and irregular in shape. When capsule was incised, bone was found to be carious. Olecranon process and portion of ulna shaft excised. Head of radius also removed. Condyles of humerus apparently normal and were not disturbed. Synovial membranes also removed as far as possible.

Arm put up in internal angular splint, with slight amount of traction.

Pathological report: "Chronic inflammatory" condition.

Jan. 19, 1908. Wound healed. Discharged.

Case 149. T. C., male, forty-four. Infectious arthritis. Operation, Sept. 22, 1909.

Incision over inner aspect of left knee. When capsule was opened, a number of villi were found and removed. Few small slightly eroded areas found over surface to tibia and femur. Full extension of leg not obtained.

Sept. 24. Plaster cast applied ankle to groin with leg in as full extension as possible.

Oct. 12. Motion of knee not improved.

Oct. 20. New cast applied and about 10° extension gained.

Oct. 25. Discharged.

Nov. 22. Patient re-entered hospital.

Dec. 1. The usual incision made as for excision of joint. Patellar tendon cut across and knee flexed. Knee showed a large amount of villous growth, and some destruction of articular cartilage present. As little of head of tibia and femur removed as possible. Villi removed from lateral aspects of joint, also quadriceps pouch dissected out. Patellar ligament restored with catgut. Left knee forcibly extended and plaster applied.

Dec. 15. New cast applied.

Case 150. T. L., male, thirty-nine, single. Operation, Feb. 16, 1906.

Incision 10 cm. long over inner aspect of left knee above patella. Muscles separated down to synovial membrane which was much thickened, and when opened a large amount of serous, straw-colored fluid escaped. Many subsynovial fat tabs found. These were excised, and through a counter incision on opposite side of joint a similar condition was found. These fat tabs were also removed as carefully as possible. Nothing abnormal seen or felt in the cartilaginous surface. Joint thoroughly irrigated with sterile water and wounds closed.

Feb. 18. Knee septic. Patient anesthetized and knee thoroughly prepared. All stitches removed and a bloody fluid containing flocculi with septic odor evacuated. Joint thoroughly irrigated with corrosive. Joint surface presented septic appearance. Drainage instituted and creolin poultice applied.

Culture, streptococcus and staphylococcus.

Feb. 21. Patient failed rapidly and died to-day.

Case 151. T. M., male, twenty-six. Infectious arthritis. Intermittent hydrops. Operation, April, 1906.

Right knee-joint opened on inner side. Capsule thick and joint contained a quantity of flocculent straw-colored fluid. Many villous formations were found and removed as far as possible. Joint irrigated and closed. Measurements taken each day showed a marked fluctuation in amount of fluid present.

May 18. Left knee operated upon and practically the same conditions found. Several hypertrophic nodes which were situated along the joint line were removed.

June 12. Discharged. Less swelling and intermittency broken up. Joint function good.

Case 152. J. H., male, thirty-five, single. Operation, Oct. 31, 1906.

Left knee-joint opened over inner side with curved incision. Capsule found greatly congested and infiltrated. Outer side of joint opened in similar manner. Slight excess of fluid, many adhesions broken up and small fatty tabs removed. Joint irrigated with sterile salt solution and wounds closed.

Nov. 7. Knee in 25° permanent flexion.

Nov. 21. Plaster cast ankle to groin; knee in position of 20° flexion.

Nov. 26. Split cast. Can extend leg to within 10° of straight; 45° flexion possible. Discharged.

Jan. 18, 1907. Motion in flexion to 10° of normal. Walks without limp. Continue massage and baking.

Case 153 (*a*) J. F., male, thirty, married. Operation, Nov. 21, 1906.

Right knee-joint opened over inner aspect. About 2 oz. of turbid fluid evacuated, containing considerable yellowish, gelatinous material. Synovial membrane hyperemic. Joint thoroughly evacuated and irrigated with hot salt solution. Wound closed, silk seton remaining.

Dec. 5. Plaster, ankle to groin.

Dec. 8. Discharged.

Case 153. J. C., male, sixty-four, married. Operation, Feb. 4, 1907.

In February, 1906, patient had cartilages removed from both knees without relief. Diagnosis, hypertrophic arthritis. X-ray shows bony thickening of condyles, spurs on femur and patella, some obliteration of epiphyseal markings. Right knee opened through old scar, x-ray interpretations verified. Two small pieces of bone removed from external condyles and wound closed. Plaster cast applied.

Feb. 13, 1907. Discharged improved.

Feb. 19, 1908. Patient died. Probable sarcoma of femur.

Case 154. J. B., male, forty-three, single. Operation, March 15, 1907.

Right knee opened over inner side. Capsule thickened and vascular. Synovial membrane hypertrophied and

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by its redundancy caused numerous folds in the interior of joint cavity. Three of these folds were excised. Joint opened over outer side, same synovial condition found and about the same amount excised. Capsule and bone apparently not diseased. Wounds closed leaving silk seton in lower angle of either wound.

March 25. Discharged. Subsequent return of symptoms similar to that before operation, followed by a gradual improvement at operation.

Case 155. J. S., male, thirty-five, married. Operation, May 5, 1909.

Patient was in hospital Jan. 3, 1908, with diagnosis of tubercular knee. Refused operation and was discharged. For a few months he was able to work without much trouble, but for the last few months he has been obliged to discontinue work owing to the severe pain. Re-entered hospital.

Left knee opened over inner and outer aspects. Slight excess of. fluid present of a brownish color. Capsule thick and synovial membrane presented a sluggish inflammatory condition. Under patella a fibrous lipoma was found and excised. Fibrous tags of the same nature found in the quadriceps pouch and on outer side of joint surface. Entire surface curetted with gauze and cavity irrigated with sterile salt solution. Wound then closed.

May 19. Good motion to a right angle, no subjective symptoms.

Discharged.

Case 156. J. S., male, seventeen, single. Operation, Sept. 4, 1908.

Left knee-joint opened over inner aspect. When the thickened capsule was incised, about 2 oz. of straw-colored fluid was evacuated. A velvety pannus covered a portion of the tibial head. This and the interior of the capsule were curetted with gauze and wound closed.

Sept. 25. The same operation was performed on the right knee. Conditions similar to above, but less fluid found.

Oct. 8. Both wounds healed and knees will flex voluntarily to a right angle.

Case 157. T. F., male, forty, married. Operation, Sept. 14, 1908.

Right knee-joint opened over inner aspect. Several ounces of sero-purulent fluid containing fibrin flakes evacuated when thickened capsule was incised. Interior of joint curetted with gauze and wound closed.

Oct. 4. Same arc of motion as before operation.

Oct. 5. Discharged home.

Case 158. E. C., male, twenty-two. Operation, Sept. 16, 1908.

Left knee opened over inner aspect. Capsule thickened. Joint full of sero-purulent fluid containing fibrin, which was evacuated and joint wiped out with gauze and irrigated with sterile salt solution. Wound closed.

Sept. 30. Severe pain has continued. Plaster cast applied.

Oct. 19. Manipulation under anesthesia. Full flexion obtained by breaking up numerous adhesions. About 2 oz. of sterile olive oil injected under patella.

Nov. 4. Discharged home.

Feb. 7, 1909. Slight swelling. Extension limited a few degrees.

July 14. Manipulation under ether and 20° flexion gained beyond a right angle. Adhesions in quadriceps pouch broken up.

Case 159. H. M. M., male, thirty-one, married. Operation, July 7, 1909.

Left knee-joint opened over outer surface. When capsule was incised a quantity of yellowish fluid containing a large sanguinous clot was evacuated. No disease of bone or cartilage was discovered. Joint irrigated and wound closed.

July 15. Discharged. Convalescence uneventful.

Case 160. E. F., male, thirty, single. Operation, July 28, 1909.

Left knee-joint opened over inner aspect. Capsule very thick. Interior of joint covered with organized fibrinous exudate which was very tenacious and could be removed only with difficulty. Similar incision over outer side of joint and same conditions found. Joint wiped out and irrigated, wound closed and light cast applied.

Aug. 13. Discharged to care of his family physician.

Case 161. J. R., male, twenty, single. Infectious arthritis knee. Operation, Feb. 8, 1902.

Joint opened as for excision. A large amount of amber-colored serous fluid evacuated. Synovial tabs found throughout the joint were removed as completely as possible. Cavity then throughly irrigated with sterile water and wound closed.

Posterior wire splint applied.

Feb. 26. Slight amount of fluid in the joint. Motions good, no pain or tenderness. Discharged.

Case 162. I. M. C., male, thirty-nine, married. Osteo-arthritis. Operation, July 11, 1902.

Right knee opened by linear incision over inner aspect. Capsule thick and very vascular. Joint fluid not in excess. Ends of femur presented a squared appearance, due to a redundant growth of fibro-cartilage above it. On under surface of patella, especially near the inner margin, were several bony prominences with corresponding depressions due to osteophytic thickening of the patella. No evidence of inflamatory or maligant growth.

Wound closed and light plaster cast applied.

July 22. Discharged.

Oct. 22. Flexion to 20° beyond a right angle. Complete extension possible.

In this group there is one case of infection, and that had a fatal termination. The patient was not in very good condition and the original polyarthritis was of rather recent origin. In reviewing the case, however, it was impossible to account for the result in any way, though it seemed probable that it was due to some failure in the operative technic.

It will be observed that in this group there were several attempts to preserve motion after arthrotomies by the injection of sterile oil. The writers have been unable to satisfy themselves that the oil has exerted any strikingly helpful influence upon the preservation of motion.

A few cases have strayed into this group that do not belong here on a strictly pathologic classification, and some of the female cases have strayed over among the male group of infectious cases.

In this fourth group are included a number of arthrotomies performed for various reasons upon patients presenting a number of different pathological conditions, or else lesions which are identical to those described in the knee-joint have occurred in other hip-joints where the technic is different from that already described only as the anatomical region necessitated some slight modification.

The following operations were performed upon the hip-joint. In attempting the surgical treatment of lesions of the hip-joint, the problem may be attacked from various positions. Anterior, posterior, or lateral, straight incisions are best. For exploratory incisions the anterior route is

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the better; also, for the treatment of acetabular overgrowths or the wiring or nailing of intracapsular fractures. Excisions are best accomplished through the Langenbeck posterior incision.

CASE 163. E. C., female, thirty-four, married. Osteomyelitis hip and stiff knee. Arthrotomy of hip and knee. Murphy's arthroplasty and oil injections. Operation, Dec. 20, 1907.

Linear incision over outer aspect of left thigh above the trochanter. Periosteum over trochanter very thick and adherent to bone. Latter incised and bone removed exposing cortex which was very thin. Cavity found underneath walled off with a hard bone. Contents removed and remaining bony surface thoroughly curetted.

Dec. 27. Wound septic but discharge slight. Sinus dilated and about 3 oz. of thick pus evacuated.

Jan. 29. Left knee flexed under anesthesia. During manipulation a great amount of crepitus could be felt.

Feb. 7. No improvement in knee motions.

Feb. 12. Knee manipulated and ½ oz. sterile olive oil injected into joint under patella. About 40° of flexion obtained without much force, but this could not be preserved.

Feb. 26. Operation. Arthrotomy.

Incision over inner side of knee. Adhesions broken up with finger. Quadriceps pouch obliterated by adhesion with few between patella and femoral condyle.

Outer side of joint opened and incision over inner side extended upwards about three inches. Arthroplasty performed and flap sutured to joint capsule on outer side. After closing wounds, except for purse-string suture in outer wound, sterile oil was injected and wound closed.

Plaster bandage ankle to groin.

March 17. About 4 or 5° of motion in joint. Patella free.

April 1. Manipulation and 30° flexion obtained by using considerable force.

April 13. About 20° easily obtained.

April 25. Less motion in knee. Hip still shows slight discharging sinus.

June 1. Slight motion in knee, seems limited by cicatricial tissue. Patient about on crutches.

June 29. Discharged home. Knee very painful beyond 5° motion in flexion. Thin sero-purulent discharge from hip sinus.

Jan. 2, 1909. Re-entered hospital.

Hip has been painful since last operation. Two or more sinuses have been constantly discharging. Physical examination: Leg: flexed with slight adduction, 2¾ inches shortening with very slight atrophy. Probe can be passed down to bone through a sinus over lateral aspect of thigh.

Jan. 6. Incision made upward along track of sinus to posterior surface of the joint. An old fracture of femoral neck was found with lower fragment pushed back giving an abrupt off-set to bone. Firm union seemed to have taken place, but bone was roughened at this point without any evidence of disease. Posterior capsule divided and both head and neck of bone seemed to be normal. A small sequestrum was found, however, on the posterior surface of the acetabulum, which was removed by extending the incision across the buttocks. No bone sinuses found. Wound washed out with salt solution followed by bichloride solution and closed, leaving one large rubber drain.

Jan. 15. Patient has had considerable pain but little discharge until to-day. Reddened area about wound.

Jan. 18. Profuse discharge. Staphylococcus culture.

Feb. 7. Wound irrigated daily with ½ % of formalin solution. Less discharge, but area about the wound remains infiltrated and very tender.

Feb. 8. Condition same. Some infiltration extending up side of os innominatum.

April 12. Condition begins to show improvement.

May 8. Discharge ceased. Patient able to walk about ward with crutches.

May 10. Discharged home.

The injection of oil and manipulation of the knee-joint of this patient, as well as the attempt to procure motion by arthroplasty was a failure.

*(To be continued.)*

## Clinical Department.

### SOME CASES OF SUDDEN DEATH DURING PREGNANCY AND THE PUERPERIUM.*

BY HANNAH G. MYRICK, M.D., BOSTON,

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THIS subject has been a favorite one with French writers since the time of Philip Pew.[1] In his book, "La pratique des accouchements," published in Paris in 1694, he devotes some eight or ten pages to the prognosis of life in parturient and puerperal women. "When questioned as to the chances, no man ought to absolutely promise any favorable outcome, so difficult is experience. In point of fact, many women, however well attended, however happily delivered, nevertheless cannot escape death. An operator may have acquitted himself perfectly of his duty, his accouchement may have been conducted in the best possible manner, there is needed only one of those unhappy accidents, of which the life of man is full, to cause death, all at once, when least expected. God is master of the life of man; on our part, however qualified we may be, let us promise nothing definite." (Translation from original.)

Brouardel, in 1895, defines sudden death as the rapid and unforeseen termination of an acute or chronic illness which has most often developed in latent fashion. Tarnier considers as dying suddenly those who, suddenly afflicted, succumb a short time afterwards, as, for example, two hours later. Rudaux[2] would include all cases of death which have been preceded by symptoms of short duration.

Among the chief causes of sudden death among pregnant and puerperal women are cardiac disease, embolus, cerebral hemorrhage, grave intoxication, as eclampsia, and hemorrhage from various sources, placenta previa, rupture of the uterus, ectopic gestation or abortion.

The first case in this report is one of cardiac disease. On July 18, 1907, I was called to see Mrs. B., a primipara, aged thirty-four. Her last menstrual period had occurred on Nov. 20, of normal amount and character. Her condition during pregnancy had been good until three weeks previous, when her feet began to swell. Her urine had been examined on May 9 and reported free from albumen. The swelling of the feet had increased and extended up the legs and thighs. There was shortness of breath, pain in the back and inability

* Read at a meeting of the Norfolk District Medical Society, Jan. 25, 1910.

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to lie down on account of the abdominal distention and pressure. There had been no headache, nausea or eye symptoms. For the past few days the urine had been decreasing in amount. The bowels had moved regularly. Physical examination showed a large, fleshy woman; abdomen very much distended and projecting far forward in the standing posture. Considerable gas in the bowels. Breasts very large and heavy, resting on abdomen. There was no edema of the face or upper extremities, but the feet, legs, thighs and lower half of abdomen were extremely edematous, hard and brawny. Pelvic measurements all slightly above normal. Breath sounds harsh in the upper part of the lungs, but no râles heard; backs not examined at this visit. On account of the large breasts the cardiac area could not be defined by percussion, but the apex beat was well heard nearly to the anterior axillary line; the second pulmonic was loudly accentuated; the second sound at the aortic area and at the apex reduplicated. No definite murmur heard.

Up to this time the patient had been on ordinary diet and received no medication as she had not considered her condition serious until the increasing swelling of the limbs made it difficult for her to get about. She had been sleeping very little; she coughed a little, but said that she had had chronic bronchitis since an attack of whooping-cough at five years of age. Later a somewhat indefinite history of rheumatism when a child was obtained.

A binder was applied to the abdomen to relieve the dragging and weight. Basham's mixture was ordered and a milk diet. A twenty-four-hour specimen of urine was examined and gave the following: Total quantity, 450 ccm.; dark amber, slightly turbid, heavy sediment; specific gravity, 1,020; reaction strongly acid; albumen, 1.125 gm.; urea, 9 gm.; total solids, 21. Many casts, hyaline and coarsely granular, nearly all with renal cells adherent. As soon as the twenty-four-hour urine had been collected the patient was given calomel followed by a saline.

On July 20 a diastolic murmur replaced the reduplication at the apex and was heard of maximum intensity along the left border of the sternum. The aortic second was still reduplicated. The patient was given pil. digitalis, squill and calomel aa gr. i twice daily.

On July 23 the patient felt better, breathing was easier, but there was no decrease in the edema. The heart sounds were stronger and the point of maximum impulse was easily detected 12 cm. from the mid-sternal line. The reduplication was entirely replaced by a murmur.

The urine on July 24 was 600 ccm.; specific gravity, 1,018, strongly acid; albumen, 0.75 gm.; urea, 11.4 gm.; solids, 25.16. There were a great number of coarsely granular casts with renal cells adherent and much renal epithelium. On July 25 the cardiac murmur was very loud along the left border of the sternum. Two murmurs were heard at the aortic area. The edema of the left leg seemed a little softer, but there was no marked improvement and the patient consented to go to the hospital.

She was admitted to the medical ward of the New England Hospital for Women and Children July 25, 1907, service of Dr. Marion Nute. The patient was much more comfortable in the hospital, enjoyed cabinet baths, and slept fairly well, propped up in a chair.

On July 27 at 11 P.M. the patient had a sudden attack of dyspnea, during which she became almost pulseless. The following morning she was much easier, but there was still considerable dyspnea and at a consultation between the medical and maternity departments it was decided that the patient's general condition was so desperate that there was no alternative but to take the risk of bringing on labor prematurely; a diagnosis of twins was made.

The patient had a good night and the following morning was transferred to the maternity ward on the service of Dr. Call as chief and myself as assistant. The patient was extremely nervous and apprehensive. She was given an enema and prepared for induction of labor, maintaining a sitting position throughout the preparation.

It was our intention to insert a bougie into the uterus to start labor pains. With the patient still sitting up I made a digital examination of the vagina and had just inserted a speculum when the patient had a violent attack of dyspnea; the speculum was withdrawn and measures for relief at once instituted, but the dyspnea increased rapidly, the pulse weakened and there was marked cyanosis. A small vein above the right elbow was opened, but no blood could be withdrawn and in a very few moments death occurred. As a fetal heart could still be heard, the abdomen was rapidly opened and two infants delivered by Cæsarean section, — a girl weighing 2,746 gm. and a boy of 2,022 gm. Both hearts beat for three quarters of an hour, but all efforts at resuscitation failed.

A complete autopsy was not performed, but examination of the viscera through the abdominal incision showed chronic mitral and aortic endocarditis with insufficiency, cardiac hypertrophy, effusion into the pericardium and pleuræ, and chronic passive congestion of liver, lungs, spleen and kidneys.

The second case is one of eclampsia. Mrs. W., primipara, aged twenty-five, was admitted to my service at the New England Hospital March 7, 1909, in an unconscious condition. A convulsion had occurred that evening at 10.15 P.M. and a second one in the carriage on the way to the hospital, which she reached at 11.30 P.M. Examination showed the cervix taken up and the os admitting one finger. Blood pressure, 180. The fetal heart could not be heard. Bromide and chloral were given per rectum and the patient put at once into a hot wet pack. Dilatation progressed rapidly, but eight more convulsions occurred between midnight and 6 A.M., the blood pressure varying from 180 to 230 mm. Morphine, gr. ¼, was given shortly after 6 A.M. and at 6.30 a macerated child was delivered by low forceps. There were no more convulsions till 8 A.M. The blood pressure at this time was 190 mm. A second injection of morphine was given and a hot blanket pack. The patient was very quiet in the pack and the blood pressure gradually fell. The breathing became quiet and natural, pulse good and the patient seemed much better. About 10.45 A.M. it was noticed that the left pupil was much larger than the right and the blood pressure began to fall rapidly (see chart). Other than this the general condition seemed quite satisfactory. A consultation was held as to the desirability of stimulation on account of the rapid fall of pressure, from 195 to 90 mm., but the pulse-rate was good and regular, breathing quiet and natural, and a favorable outcome seemed fairly to be expected. At 11.52 A.M. the patient suddenly became very cyanotic and death occurred in the course of a few moments.

No autopsy was permitted. Although in this case the patient had had eleven convulsions there had been none for nearly four hours before death, the stertorous breathing had been replaced by quiet and natural respiration and the whole appearance of the patient was such as to convince those who examined and watched her that her

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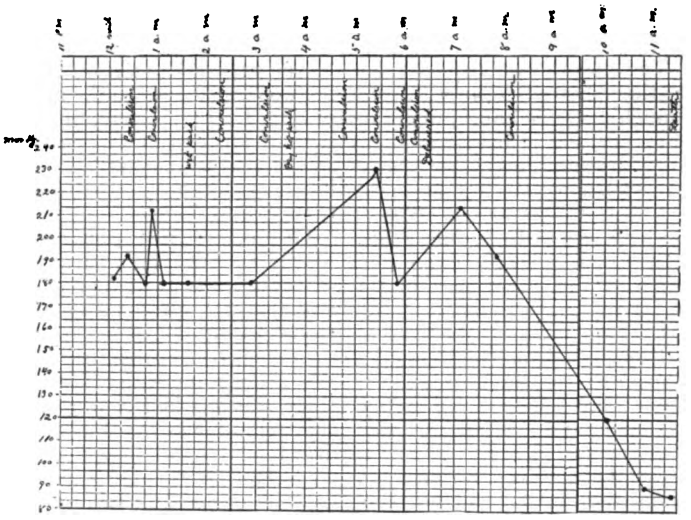

Blood pressure chart, Mrs. W.

sudden death was due to either embolus or cerebral hemorrhage. Rudaux calls attention to this as a cause of death in certain cases of eclampsia, stating that the albuminuria causes alterations in the vessels, that labor and especially convulsions increase the vascular tension. Balika [3] also reports a case where after twelve convulsions the pulse was only 64–68, labor pains good and patient doing well; three hours later sudden death occurred. Autopsy revealed extensive cerebral hemorrhage.

My third case is one of cerebral hemorrhage. Mrs. C., aged twenty-one, para II, was admitted on my service at the New England Hospital May 19, 1909. Her first child was stillborn at seven months. The present pregnancy was within a few days of term, the last menstrual period having occurred on Aug. 22. She was not in labor on admission, but thought that the child was dead as she had not felt life for some time. The urine contained a small amount of albumen. Pains began soon after admission and the labor was uneventful, terminating in the birth of a stillborn child weighing 3,340 gm. For two days following delivery the patient felt nauseated and had some difficulty in voiding urine, but from the third day the puerperium was normal. On the tenth day the patient sat up for half an hour, and the following day for an hour in the morning; towards evening of this the eleventh day she complained of headache and her temperature reached 99.4°. Next morning the headache continued and the temperature was 100.6. At about 10 A.M. she was seized with a convulsion; the twitching was practically limited to the left side and especially the upper extremity; the tongue was bitten, but there was no twitching of the face muscles. This convulsion lasted six minutes. Two hours later there was a second attack lasting four minutes; twenty minutes later there was twitching of the left arm, but consciousness was retained. The blood pressure was only 100 mm. A catheterized specimen of urine showed a very slight amount of albumen. During the afternoon and evening the patient was quite comfortable and talked a good deal. In the early morning of the following day she became restless and at 5.05 A.M. twitching of the left side of the body occurred, especially the arm; the face muscles were not involved. The face was flushed, eyelids swollen, and the eyes seemed a little more prominent than previously. The convulsive twitching increased in intensity, with but momentary intermissions, and by 1.30 P.M. the muscles of the left side of the face and both eyes began to twitch; the head was drawn to the left. In spite of the violent movements the patient appeared to hear when spoken to. The temperature rose during the morning, reaching 105.6, where it remained through the afternoon. At 3.30 P.M., the convulsive movements of the left side still persisting, the right leg became paralyzed. At 8.35 P.M. the left arm stopped twitching for the first time in fifteen hours. At 9.45 the twitching of the left side of the face and left eye ceased. The lips and finger tips were cyanotic. The pulse could not be felt on either side, but the heart was beating eighty times per minute; the body was hot and moist, the right leg much mottled, respirations sighing. Death occurred at 10.24 P.M. The temperature shortly before death reached 108.6°.

Dr. James J. Putnam saw the case with me during the forenoon and thought it undoubtedly one of cerebral hemorrhage. No syphilitic history could be obtained, but the history of a previous pregnancy ending in the premature delivery of a stillborn child, together with the second stillbirth, is certainly suspicious. Dr. Putnam was inclined to think that the hemorrhage was caused by changes in the vessels due to pregnancy rather than to any specific influence. A history was obtained of partial paralysis of the right leg following an attack of fever at three years of age; the fever was said to have been scarlet fever, but on closer questioning of the patient's mother it seemed highly probable that it was really acute anterior poliomyelitis. A complete autopsy was permitted and the following condition within the brain was found (Dr. L. J. Rhea):

Dura strips easily from the pia. The great longitudinal sinus contains a friable, pale, grayish-red clot which in places is adherent to the vessel wall. The pial vessels are generally enlarged and contain a clot; in some this is definitely adherent to the vessel wall. Beneath the dura covering the left lateral hemisphere is a thin diffuse layer of blood clot; anteriorly this clot covers the brain completely; there is a similar lesion, though much less marked, over the right hemisphere. On section the brain surface on the left side shows no gross lesions. About the center of the brain substance of the right hemisphere, and situated just posterior to the fissure of Rolando, is a fairly well-circumscribed

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dark-red blood clot about 6 cm. in diameter; the brain substance immediately around it is soft and generally light red with small bright points throughout. Vessels at the base of the brain and skull are normal. Anatomical diagnosis: Cerebral hemorrhage. Thrombosis of longitudinal sinus. Subdural hemorrhage.

The reported cases of cerebral hemorrhage during pregnancy and the puerperium are comparatively few. Jardine[4] reports one occurring in the eighth month of a third pregnancy; both other pregnancies had resulted in the birth of a stillborn infant at seven months. The patient during this third pregnancy had been exceedingly nervous and apprehensive lest this child should also be lost. The attack began with sudden loss of power in the right hand; the face twitched and was drawn to one side, and the patient became unconscious. On admission to the hospital ten hours later a large quantity of albumen was found in the urine. Death occurred during labor three days later. No evidence of syphilis could be found, but the history of the previous labors was suspicious. Rudaux also reports a case of death sixteen hours after delivery, the symptoms in this case lasting six hours. There was no actual hemiplegia, but shaking of the upper limbs, followed by contraction and finally relaxation. There was Cheyne-Stokes respiration, increasing coma and death. Autopsy revealed a large cerebral hemorrhage.

In connection with the first case in my series an interesting question arises whether the fatal attack of dyspnea was due to a culmination of the patient's extreme nervous apprehensions, or whether it was precipitated by reflex nervous action resulting from the vaginal examination. McClanahan,[5] in enumerating the causes of sudden death in pregnancy and the puerperium, says, "Among the rare causes of sudden death should be mentioned the reflex nervous shock resulting in some inexplicable way from vaginal examination or manipulation." Rudaux also refers to it as one of the causes of sudden death, and Mihalkovits,[6] Frigyesi[7] and Von Seuffert[8] report cases of death during or immediately following examination.

The question of performing post-mortem Cæsarian section in such cases is an open one. Some authors advise against it on the score of the shock to the patient's family and the doubtful chance of obtaining a living child. Weiswanger,[9] indeed, reports a living child delivered by Cæsarean section nineteen minutes after the death of the mother, but such cases are phenomenal. Many recommend rapid extraction per vaginam in the case of multipara, as the tissues are relaxed and easily dilated immediately after death. Von Seuffert has tabulated the reports of various writers to determine the number of living children delivered by post-mortem Cæsarean section. In his first table, out of 778 cases reported by five different writers, a living child was obtained only nine times. His second table, from more recent statistics, gives 81 cases reported by three different writers with 40 living children; the improved results he attributes to better methods of resuscitation. He gives three cases of his own; in the first the infant was resuscitated with some difficulty; in the second case, one of cerebral hemorrhage, the infant was dead and in the condition of rigor mortis. His third case was one of eclampsia and brain tumor, a twin pregnancy; the hearts beat for thirty and forty minutes after delivery, but neither infant could be resuscitated, a somewhat parallel case to the one I have reported.


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## Medical Progress.

### RECENT PROGRESS IN OPHTHALMOLOGY.


BY MYLES STANDISH, M.D., BOSTON,
AND
EDMUND W. CLAP, M.D., BOSTON.


#### TRAUMATIC RING-SHAPED OPACITY OF THE LENS.

Vossius, in 1903, first described two cases of ring-shaped opacity of the anterior surface of the lens following traumatism and disappearing in a few weeks. Now 17 cases are on record, 15 of contusion and 2 of perforation of the eyeball. The opacity is situated in or on the anterior surface of the lens at the center, and is about the size of a contracted pupil. It is usually annular, but may be incomplete, made up of dots or of fine lines, and the ring may be of varying width. In some cases the opacity was disk-shaped, of fine dots closely aggregated at the periphery, giving the effect of a ring at first sight. Gifford reports one with fine stippling all over the anterior surface of the lens both inside and outside the ring, and Löhlein speaks of disk-like opacity with ring-shaped accentuation. Hoeg's case showed very slight opacity within the ring and a few radial opacities towards the lower periphery of the lens. The opacity is of a light gray color, in some cases not visible by reflected light, but darker by transmitted light, and in some cases has a brownish color or the gray dots are mixed with brown ones, suggesting pigment left by posterior synechiæ. The ring is best seen by dilating the pupil. Hyphema was present in many but not in all the cases, and other results of contusion, as abrasions and infiltrations of the cornea, mydriasis, posterior synechiæ, chorioidal rupture and hemorrhage into the vitreous. The opacity clears up in from one to six weeks, usually in three weeks, without in itself affecting the vision. While usually circular, the opacity in one case with prolapse of iris was ovoid, corresponding to the pear-shaped pupil. The opacity probably occurs immediately at the time of the traumatism or within a very

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short time, as it has been found within a few hours of the accident and has always gradually lessened, never increased, after it was first observed. In most cases the injury was caused by a slight or moderate blow. Vossius thought it was due to pressure of the pupillary edge on the anterior capsule of the lens, and the brown discoloration was iris pigment. He supposed the cornea to be suddenly forced in against the iris, pressing it on the lens round the edge of the pupil and causing some adhesion of pigment and a degeneration of the epithelium of the lens capsule, and this view was generally accepted till Hoeg called attention to the impossibility of the cornea coming into contact with a sufficiently large area of lens and iris to make the ring without rupture of the cornea or iris. Also the blow would have to be exactly in the center of the cornea and be due to a small body, and this would make more of an impression at the center of the anterior capsule and, therefore, not in the form of a ring. But these rings are caused by objects varying in size and striking the eye from different directions and usually without rupture of the cornea or iris. Gifford reports a typical case caused by a glancing blow of a small piece of copper at the inner periphery of the anterior chamber. Steiner's case was caused by a bullet wound in the orbit compressing the eye from behind without directly injuring it. Hoeg and Gifford agree that the appearance is undoubtedly due to degenerative changes in the anterior capsule with some pigment from the iris in some cases, but the cause is the sudden increase of pressure in the anterior chamber pushing the iris against the lens.

### CATARACT EXTRACTION IN THE CAPSULE.

The past year has shown a great development of interest in the extraction of cataract in the capsule as practised by Major Henry Smith, Jullundar, India. Several surgeons have gone to India and done the operation under his personal instruction, doing one to four hundred extractions apiece, so that their reports and opinions are worthy of attention. The early hostility to this operation is passing away as we find that Smith's technic has not been used by other operators who have supposed they were doing his operation, and it appears now that Smith has made an important contribution to ophthalmology, even if his operation does not finally supplant the capsulotomy operation in all but certain cases. It will be admitted that removal of the lens in its capsule is a vastly better procedure than the leaving of the torn remains of capsule and fragments of lens substance so apt to cause delayed healing, iritis and infection. The question is, Can extraction in capsule be done safely without frequent loss of vitreous by an operator of average experience and ability? Smith has done 22,000 operations, 20,000 of them in the capsule by his method, and has acquired a high degree of skill in it. He has modified his procedure from time to time, trying various expedients through a large series of cases, and now for two years he has followed his present method without change. He extracts all sorts of senile cataracts, simple or complicated, but not juvenile or congenital, as here it is almost impossible to dislocate the lens. A trained assistant is necessary, and his skill is as important as that of the operator. He must know just what to do as each emergency arises, and the avoidance of loss of vitreous is chiefly due to his manipulations. The corneal section is made with a speculum in place and the eye held with fixation forceps. The knife starts well back in the sclerocornea and the counter-puncture is made in a corresponding position in such a way as to have the section include nearly one half of the circumference of the cornea. The cut should be made if possible with the one thrust across of the knife or certainly completed with the drawing back, no sawing, but a clean cut, bringing the knife out in the cornea nearly at a right angle to the surface so as to have no overriding which may cause unnecessary astigmatism. Iridectomy may or may not be done. Perhaps it is best for beginners to make a small one. After the iridectomy, the speculum is removed and the assistant takes charge of the lids, drawing down the lower lid by the thumb of the left hand and lifting the upper lid up away from the eye on a large strabismus hook held between the thumb and first two fingers while the third and fourth fingers press firmly on and draw back the brow, giving a complete control of the lids and preventing the patient from squeezing out vitreous. The eye is now relaxed at the bottom of a pit in which the operator must work, but where there is very little tendency for the vitreous to extrude. The eye may now roll up or into whatever position the patient chances to put it, though this is usually up. Smith does not give the patient any commands as to what he shall do, and operates with the eye in any position, not speaking to the patient at all and, indeed, the American operators who did so many operations in India report that they could not have made their patient understand even if they had wished to. Next the blunt point of a strabismus hook should make firm pressure over the lower edge of the lens, viz., on the lower part of the cornea, directed back towards the optic nerve and then steadily maintained. As the lens yields it must be followed up to keep it in the wound and prevent the escape of vitreous, so the hook folds the corneal flap up under the escaping lens, letting up as soon as the lens is out. Intumescent lenses may be made to turn over by pressing on the lower edge backwards and then down towards the patient's feet till the suspensory ligament ruptures, when the hook follows up as the lens turns over and comes out lower edge in advance and posterior surface upward. Should vitreous present, it may be held back with the spatula in the left hand and the lens be delivered sliding up and out on the concave surface of the spatula. The assistant still controlling the lids, the iris can be deliberately replaced and the eye closed and bandaged and not redressed till the eighth day, as iritis is not to be feared after this operation. Rupture of the capsule during expulsion of the lens is a serious accident as vitreous

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usually is lost in attempting to pull out the remains of the capsule, and iritis and infection may follow leaving the capsule behind. Removal of the ruptured capsule should be tried, but if not accomplished a needling may be done later if necessary. Smith has less than 5% vitreous loss, and his pupils report about 5% of losses of vitreous, but this showing can be made by beginners only under skilled guidance. Numerous authors favor the operation especially for immature, slowly ripening cataracts, where our present methods mean a long wait for the patient. Savage has devised an instrument for tearing the suspensory ligament before trying to express the lens, and numerous modifications are described by English and American authors. The future of the operation in the hands of other operators than Smith and on other races than the Indian will be decided only by a large series of cases.

### SYMPATHETIC OPHTHALMIA.

One of the many unsolved problems of sympathetic ophthalmia is to account for the cases, few but undoubted, which occur with sarcoma in the first or exciting eye, without any wound or perforation. Meller discusses this subject, and as our knowledge of sympathetic ophthalmia has made advances, especially along pathological lines, in the last few years, it is worth while to give a summary of what we know certainly about it. Sympathetic ophthalmia is a specific affection of the uvea, characteristic histologically. The uvea of the first eye forms a granulation tissue of lymphocytes, epithelioid cells and giant cells, as specific an infection as tubercular or syphilitic infiltration of the uvea, caused by a definite virus. Sympathetic ophthalmia is completely distinct from other forms of uveitis, whether they spontaneously arise or occur after injuries. Fuchs showed how we can distinguish a sympathizing or an exciting infiltration from endophthalmitis whether one is present alone or both are present at the same time. Sympathetic infiltration always starts in the uvea and especially in the choroid, which is never spared entirely. Though most authors assume the necessity of an external opening (operative, accidental, or from perforating ulcer), there is now no doubt that cases occur without trauma, and the infection might, of course, be endogenous even in the cases of external opening, which may change the resistance of the eye. Meller's present case is one of sarcoma leading to blindness of one eye seven years before the second eye was attacked by typical sympathetic inflammation. The sarcomatous eye from necrosis of the growth had had a severe plastic inflammation, but, so far as the uvea was not destroyed by the sarcoma, sympathetic infiltration was clearly present. As no signs of degeneration were present, the duration of the exciting infiltration could not have been long. The histological examination was very thorough, and a complete series of sections of the whole globe showed that there was no scar of any perforation, recent or old, viz., no communication of the eye with the outside. The sarcoma had recently started to grow again, and there was some necrosis, which possibly accounts for the starting of the sympathetic process. This case, with thirteen collected by Schirmer and three by Fuchs, comprise the authentic reported cases of sympathetic inflammation following intra-ocular sarcoma, and twelve of these cases had no perforation of the globe, viz., the sympathetic infection must have been endogenous. If the germ, then, may circulate in the blood, why do we not get this type of ophthalmia after infected wounds of other organs of the body? A previously sound eye is not subject to the exciting inflammation; always the uvea must have suffered some injury or infection in order to become the site of this specific infection. Too severe an endophthalmitis (especially a panophthalmitis), on the other hand, is unfavorable to the development of sympathetic. In these cases of sarcoma the uvea has been the seat of an inflammation not of sympathetic nature first, or there has been direct injury of the uvea from necrosis of the growth, showing that the ground must be prepared. All observers have been surprised that a very small proportion of all eyes enucleated as in danger of giving rise to sympathetic ophthalmia really have shown the characteristic infiltration of an exciting eye, but if the infection be an endogenous one, this fact is not surprising; the eye did not have the exciting infection, but had conditions favorable to it. It might not begin for years, but when it did, then the other eye shortly incurred the infection, but an enucleation short of the time of the endogenous primary infection would show nothing of the sort. This would explain the sympathetic ophthalmia coming on many years after the injury to the first eye, and, indeed, in these old eyes the exciting infiltration is always a fresh process. Fuchs has shown that the infiltration, even in the exciting eye, attacks mostly the posterior part of the uvea and in numerous separate foci, afterwards fusing, but not starting and infiltrating in continuity,— all this suggesting an endogenous origin, — the process beginning from the vessels of the choroid much in the way that miliary tubercles of the choroid arise when the infection is endogenous. Sympathetic ophthalmia following sarcoma of the exciting eye is a pure and uncomplicated experiment given us by nature and indicates that even in the usual cases following injury to the first eye the origin of the sympathetic may be endogenous.

S. Weigelin, in an exhaustive and able monograph, reports a complete histological examination of 41 eyes; 17 primary eyes in undoubted cases of sympathetic ophthalmia; 8 eyes in doubtful cases; 4 eyes causing sympathetic irritation in the other eye; 2 sympathizing eyes, and 10 eyes with traumatic iridocyclitis. Interesting is the author's collection from the literature of 1,150 cases of perforating injury, of which only 12 gave rise to sympathetic ophthalmia, — about 1%. His summary is worth quoting: "In every case of true sympathetic ophthalmia the characteristic typical exciting infiltration of Fuchs was found in the first eye." "In all cases of traumatic iridocyc-

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litis in which the second eye did not have sympathetic inflammation, there was found a different anatomical picture having only a distant resemblance to the exciting infiltration." "In cases of doubtful sympathetic inflammation the pathological examination was able to decide the question." "The examination of two sympathizing eyes showed anatomical conditions similar to those in the exciting eye." "In one case of spontaneous iridocyclitis of both eyes, in the first attacked was the typical picture of sympathetic infiltration." "Admitting that we have now a characteristic pathological picture to be certainly distinguished from that of traumatic iridocyclitis, there are a few cases of spontaneous iridocyclitis not to be distinguished from sympathetic ophthalmia except that they are not preceded by a perforation of the eyeball." Meller's theory of the endogenous origin of the sympathetic virus would account for these cases. Wagenmann gives a complete pathological report of a case of sympathetic ophthalmia following extraction of a dislocated lens. An insidious fibrinous inflammation followed and five weeks after the operation the second eye gave the first subjective symptoms. Two days later the first eye was enucleated, and three days after that the second eye clearly had sympathetic inflammation. Twenty-three days later the patient (forty-eight years old) died from cerebral hemorrhage and both eyes were examined and sectioned and an exactly similar type of infiltration was found in each eye corresponding to that found by Fuchs, Schirmer, etc., in every case of sympathetic ophthalmia, as well as the endophthalmitis of Fuchs in the first eye.

### OPERATIONS FOR GLAUCOMA.

The last few years have seen several new or modified revivals of old operations for glaucoma. Iridectomy is satisfactory for acute cases and for those with persistent increase of tension, but not as useful in simple chronic cases and in those with the tension slightly elevated at times. Heine five years ago devised an operation that he called cyclodialysis which consisted in separating the ciliary body from the sclera for a short distance so as to break into the anterior chamber through the ligamentum pectinatum, making a communication between the anterior chamber and the suprachorioidal space. This operation seems to have made a place for itself. Elsching reports 110 operations in detail and prefers it to iridectomy in some cases, especially those without inflammatory symptoms. Drainage from the eye by a permeable scar has been the object of several old operations. De Wecker's sclerotomy aimed at a filtration scar without inclusion of the iris, and many varieties have been introduced, such as the operation of Herbert, who cuts a little tongue of sclera near the cornea, under a conjunctival flap, with the purpose of getting a filtering cicatrix. Then another series of sclerotomies have incarceration of iris in the wound as an essential part. Holth makes a flap incision in the sclera near the limbus, then an iridectomy is done and the iris left entangled in the subconjunctival scar. The dangers of sympathetic ophthalmia and infection loom over these operations. Lagrange's operation of sclerecto-iridectomy is done by cutting a scleral flap as near the root of the iris as possible and then cutting a sliver of sclera from the anterior lip of the wound so that an oval gap is left under a conjunctival flap. Iridectomy may be done at the same time. This operation may leave a fistulous cicatrix. Herbert also does a delicate operation consisting in cutting out a wedge-shaped piece of sclera attached only to conjunctiva so that when it is replaced it may shrink and leave a filtering space about it. A trephine operation for lowering tension was done by Argyll Robertson and others long ago, but several such procedures are recent. Fergus and Elliot each do a trephine operation to make a permanent opening for drainage; Fergus also adds what is practically a cyclodialysis. Verhoeff has devised an ingenious punch to cut out a piece of sclera with a minimum amount of traumatism, leaving a clean round hole 1 mm. in diameter. He does a small buttonhole of the iris under the hole to avoid prolapse or incarceration of the iris. Ballantyne, in reviewing these operations, concludes that it is clinically possible to produce a scar through which fluid within the eye will exude either by microscopic channels or by a small fistula. Histologically the material is too scanty as yet to decide with how much certainty we can get a permanent filtering scar in a given case, but clinically and histologically the filtering cicatrix is a reality. Further, he thinks that all these operations have a sphere of usefulness.

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## Reports of Societies.

### THE AMERICAN CLIMATOLOGICAL ASSOCIATION.

WASHINGTON, D. C., MAY 3, 4 AND 5, 1910.

[Concluded from No. 19, p. 739.]

DR. JAMES ALEXANDER MILLER, of New York, read a paper on

#### THE TUBERCULIN TREATMENT OF PULMONARY TUBERCULOSIS IN OFFICE AND DISPENSARY PRACTICE.

He classed present medical opinion as to tuberculin as follows: Those who are still influenced by early antipathy to tuberculin, caused by its misuse and

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fostered by the denunciation of Virchow; second, those who view it as a short cut to diagnosis and treatment which will spare the necessity for more laborious and painstaking methods; and, last, those who believe strongly in the value of tuberculin, but have come to realize its limitations so that it is welcomed simply as one more valuable aid to be used in careful conjunction with other methods. The last class is growing rapidly. The chief value of tuberculin is that it causes a specific response in some of the vital reactions of the body which are closely associated with true immunity, e. g., opsonins, agglutinins and precipitins; and in the additional toxin tolerance which is also, perhaps, a real toxic immunity. There is also a slight local hyperemic reaction which seems to be important. But this method of toxic tolerance, or gradual habituation of a patient to the hypodermic administration of increasing doses of tuberculin, is the chief element in the cure. No one of the ordinary preparations of tuberculin seems to possess advantage over others. In its administration the aim should be to produce no general reactions. The time element in treatment is more important than the absolute dosage, the latter varying with every case, and the former never less than six and often more than eighteen months. The method is quite as applicable in dispensary and office treatment as to those in sanatoria.

Dr. Herbert Maxon King, of the Loomis Sanatorium, read a paper on

VACCINE THERAPY IN TUBERCULOSIS AS APPLIED IN INSTITUTIONAL PRACTICE.

This consists in (*a*) the treatment of the tuberculous infection itself by some one or more of the tuberculins, and (*b*) the treatment of the pyogenic infection by the specific bacterial product indicated by the character of the secondary infection. Autogenous tuberculins are not generally employed, as there is no special advantage in their use.

At the Loomis Sanatorium two classes of patients are advised to take tuberculin, viz., (*a*) the class of incipient cases which have been under observation for a sufficiently long time to justify the belief that they are not progressive and are without fever or other evidences of a marked general toxemia, and (*b*) that class of more advanced cases, presenting evidence of "arrested" activity, who have been for some time without material change in their condition, either local or constitutional, but who still have cough and a bacillary sputum. If given in febrile cases, the results have always been negative. The one demonstrable and constant result of the suitable use of tuberculin is tuberculin immunity; this is the first consideration and the line of pursuit throughout the whole course of treatment.

Dr. King believes that a suspension of B. E. in B. F. comes nearest to the ideal choice; but B. E. has the disadvantage of producing at times, and without premonition, rather disagreeable reactions and requires, perhaps, more care in dilution than some other varieties. Dr. King gave minute directions as to dose and interval and insists on individualization in treatment. He endeavored for a long time to utilize the opsonic index as a guide to tuberculin administration, but abandoned the method as impracticable. He insists on comparative rest on the day of the injection and strict rest for thirty-six hours afterward; the injections are given in the late afternoon. This is easily controlled in sanatorium practice. Remarkably good results were obtained in laryngeal lesions where focal, not general, reactions are frequent. A typical case was cited. Dr. King then took up the treatment of secondary pyogenic infections by autogenous vaccines. This method is applicable in cavity cases with high fever which do not yield to rest in bed. The technic was described. The emulsion is made and sterilized at 60° C. and standardized. The initial dose is from twenty to forty million, which, if no counter-indications arise, is first repeated and then increased at the rate of 100% until from one hundred to two hundred million is given at intervals of from two to ten days according to circumstances. No untoward effects have been noted. Subsequent temperatures have never been noted as being higher after the injections.

Dr. Walter A. Griffin read a paper on the

USE OF TUBERCULIN AT THE SHARON SANATORIUM.[1]

It has been in use there for diagnostic purposes for eight years, and as therapeutic measure for five years. One hundred and nineteen cases have been tested by it, and 36 have had it in the way of treatment. Of the tested cases, 4 are known to have died, but only one of these died of tuberculosis, and this was a nurse who left the sanatorium in good condition and worked as a nurse for eight years. She died of hemoptysis. The usual procedure was to give 2 mgm. the first time; followed, in case no reaction occurred, by 5 mgm. and 10 mgm. In all cases either old tuberculin or bouillon filtrate has been used. These products are probably safer than some of the others and the results seem as good as with any other tuberculin.

Dr. Randall said that the applications of opsonic treatment by vaccines to diseases of the ear have been too limited and carried on by too few investigators to have reached definite results. Hardly a hundred individual cases are recorded, and while these are encouraging, especially to enthusiasts, there are too many loopholes for any estimate of them to carry conviction to clear minds. The permanence or uniformity of success which should distinguish a monumental improvement in therapy cannot yet be considered established, while some of the reports are open to suspicion of being none too well posted, or else too pessimistic as to the older measures. Closer scrutiny of the instances of its employment will probably give greater confidence in the possibilities of the method, and it is hoped that this joint consideration of the subject will serve to crystallize into more available shape its practical applications, and that growing experience will show more frequent realizations of the hopes and claims of the enthusiasts.

DISCUSSION OF VACCINE THERAPY.

Dr. J. Solis Cohen, Philadelphia: I have had a very prolonged experience with tuberculin; for thirty years I was consulting physician for consumptives, and gave the first injection of tuberculin in Philadelphia before my class at the Jefferson Medical College upon a patient with advanced tuberculosis of the larynx in the early eighties. Ten years ago I heard that that man was well and was a successful ranchman in Wyoming. I have not heard from him since. Fifteen or sixteen years ago a man came to me from the South with extensive ulceration of the larynx. He was placed under treatment and after a number of months his disease was arrested. Two years afterward his life was insured for $100,000 in the Mutual Life Insurance Company of New York. In that case not only was the injection given hypodermically, but the tuberculin was rubbed over the laryngeal surfaces, and he took rectal injections himself every night. There is no doubt that in this case there was a great success. I know of several other patients still living at different periods

[1] See Journal for July 28, 1910.

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of five to fifteen years or more, and doing well. The tuberculin that I have used has always been the old tuberculin of Koch, except when we were unable to get it, and then other forms were used, but did not appear to present any special advantages. These injections were used very much as the last two speakers have described, beginning with minute doses and gradually increasing them, and studying the patient rather than the disease.

I would like also to state something else. When I began the study of medicine some fifty-five years ago, I studied under a preceptor, as was customary at that time; and it was the custom then to apply fly blisters as near as possible over the site of the lesion of phthisis. We knew nothing of the bacillus tuberculosis at that time. Many of the cases improved, and since the tuberculin and serum treatment have been applied I have come to the conclusion that possibly the absorption of some of the serum raised by these blisters was beneficial in the same manner as the serum when injected under the skin, and, acting on that principle, it has been my custom with many of my patients to blister the chest below the clavicle, taking care that the blister shall not burst, so that the patient's own serum shall be absorbed on the same principle as the autogenous methods. I do not often attend these meetings, but would like to give my testimony as to the advantage of this treatment in properly selected cases and under proper precautions.

DR. V. Y. BOWDITCH, Boston: I can rank myself in the first class spoken of by Dr. Miller who tried it as soon as it was given to the public and after a few cases gave it up. I abandoned it after a few cases, largely influenced by the statement that there was danger of causing disseminated tuberculosis, and for many years I had a great repugnance against it. Finally I felt that I was doing injustice to many patients who might possibly be having treatment withheld which would do them good. Feeling with Dr. Griffin that certain cases had been going on under dietetic and hygienic treatment and making no progress, we agreed to give them the benefit of this treatment, and did so; the results were so startling that we felt justified in going on. To make a long story short, we now, in addition to beginning with cases which have not been doing well, begin on the incipient cases also. My position now is that of being greatly impressed with the tuberculin.

DR. WALTER A. GRIFFIN, Sharon, Mass: Taking up the consideration of Dr. Bowditch's last remarks, I would like to say something further about what we have been doing at the Sharon Sanitarium. We began with one case which had been to us before and under hygienic treatment for seven months, and had been discharged as an arrested case. In seven months she was back again, and although we kept her under hygienic treatment for five months she made no improvement beyond a certain point. It was this case which Dr. Bowditch said would be worth trying with tuberculin. We gave her treatment for five months, at the end of which time the tubercle bacillus had disappeared, and now she has been doing her laborious work in the kitchen. I saw her within a month past and went over her chest, and found her in very good condition.

The second case was similar in that the patient had been with us for several months and was not only not doing well, but was losing ground; the cough was increased and there were beginning objective signs in the larynx. She had tuberculin treatment for seven months, and it is her boast how that she has been out nearly five years and has not seen a doctor at any time within that period. We have now to report on 28 cases which have had tuberculin treatment at Sharon and have been discharged for more than a year. Of these 28 patients, 6 have died; 2 were really too far advanced to warrant advising tuberculin, but took it at their own request; 4 others were advanced cases and were given tuberculin because it did not seem possible that they could improve under ordinary hygienic treatment, and it seemed to be a forlorn chance for them. Four others are not doing particularly well. They were all advanced cases, but I am afraid they are going down hill. This makes 18 cases out of the 28 which are doing well, and this seems to be a comparatively good record when all of the cases with the exception of 3 were more than incipient, and all but the 3 had tubercle bacilli in the sputum. These 3 were given treatment for special reasons. It is known that the tuberculin will do no harm, and frequently will do good.

DR. NAGLE, Boston: I do not want to be too enthusiastic about vaccine therapy, but I believe it is a valuable adjunct in treatment. I wish, however, to emphasize the importance of the proper preparation of the vaccines and the method of giving them.

DR. C. L. MINOR, Asheville: The point is whether or not tuberculin should be used on every patient or only on selected cases. The tendency of some is to use it on every case. I have been slowly brought around from skepticism to belief in tuberculin, granted that it is a selective use. I do not believe that a patient should be put on tuberculin as long as he is making progressive and steady improvement, but for those who have done well up to a certain point and then reach a stage of chronicity when they go neither forward nor back, I believe that tuberculin is a valuable aid. When used in this way I have used it with wonderful effects. I think if the idea went out that it was applicable to all cases, much damage would be done by it. To show how dangerous it may be when used promiscuously, I would like to cite the case of a boy seen by a doctor after he had been in the hands of a quack. The boy had incipient tuberculosis, and the quack started at once on daily injections of tuberculin; the boy began to have reactions, and the quack continued the treatment until the boy became a hopeless case. Men with dangerous and uncontrolled enthusiasm might do something of the same kind with it.

I believe that it is valuable when used selectively, but all cases do not do well on it, and some cases with the greatest care are unable to take it. I would advise great care in the selection of cases for this treatment.

DR. W. B. JOHNSON, Paterson: The question is developing along the lines of tubercular disease and tuberculin. I would judge that tuberculin has been successful in a number of cases, but the important consideration to the otologist is what can be done with the autogenous or stock serum for the destruction of bacterial elements which enter into the diseases we are called upon to treat. I have followed serum and vaccine therapy for a number of years. One case of sarcoma of the pharynx I treated with the Coley serum with success — it was one of the few cases that were successful. I have also used the stock vaccines and serums, and while it seemed as if in some cases life was prolonged by the use of the serum and vaccine, it was not with me successful. It may have been that the preparations were poor. It has been stated lately that success has been attained by the use of stock vaccines, but in my experience, which has been limited to the use of autogenous vaccines prepared in Jersey City by Dr. McDowell, they also seemed to be unsuccessful. I do not wish to be understood as in any way depreciating the value of experiments in this direction, but I am still waiting and hoping that the results reported will make it desirable for all of us to use these

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remedial agents for the destruction of bacteria which enter into the diseases we have to treat.

Dr. Casselberry, Chicago: I have been particularly impressed with the favorable statement which has been given by one of the essayists, Dr. King, who refers to the pronounced favorable effects of tuberculin on laryngeal conditions in pulmonary tuberculosis, since we have not had up to this time any judgment or verdict in this respect based on so large an experience as he has had in this complication of tuberculosis. When the larynx is involved it becomes almost the dominant factor in the case, and our results up to this time have been discouragingly bad. Therefore, if — as we have hoped for the last few years with the trend of the verdicts with respect to tuberculosis — we have a remedy in tuberculin which will have in any considerable percentage of cases such effect as he has stated, we have made an enormous advance. I have been impressed with the statement that in those cases in which he got very pronounced reactions from a larger dose than was meant, the effect was good. This I have noticed many times in making the tuberculin test when it was given for the purpose of producing a general reaction; I have noticed that weeks and even months afterward there has been marked improvement in the larynx. I noticed this, but did not trust to my own observation, but gave the credit to other circumstances, — but the two go together: he has attributed it to tuberculin, and I have no doubt that he is correct. I have also had a limited experience with respect to the effects of the present-day minute doses in laryngeal cases, in which recourse was made to all other medical and surgical treatment. Elsewhere, I have reported 40% of arrested cases in laryngeal tuberculosis, some of them being those in which tuberculin in small doses had been given as an element of the treatment. Many of the men who see large numbers of pulmonary cases fail to examine the larynx. If these men would take note of the condition of the larynx and the effects on conditions there produced by tuberculin treatment, much good would be done to humanity in the direction of laryngo-pulmonary tuberculosis.

Dr. Dunn, Asheville, N. C.: There are only one or two points in these very excellent papers which I wish to comment upon. First, I want to say that it is just such good, conservative papers as these which help. The tuberculin cause has been damaged more by optimists than by anything else. The effect of tuberculin in laryngeal tuberculosis has interested me for many years. I always examine the larynx, and I have been particularly struck with the improvement taking place in distinct laryngeal involvement. It is not so very striking in the advanced cases where there are marked destructive changes. As to the improvement following the reaction, it has been my custom to watch for reactions, and I have in many instances seen the beginning of improvement in the laryngeal reaction; it has happened so frequently that I am convinced it had some association with the reaction. As to the different forms of tuberculin, I have used a number of them; I used the old tuberculin constantly and exclusively for nearly ten years; for the last few years I have used the human bacillus culture, and recently I have used the bouillon filtrate of Denis, and I have used other methods in vogue at times. I have used the B. E. and the B. F. mostly of late, but the immediate results have been practically the same; I cannot see that I have gotten any better results from bacillus emulsion or from B. F. than from the old tuberculin. Not enough time has yet elapsed to form a positive opinion as to the use of tuberculin. I am very conservative as to its value; on the other hand, I do not think our attitude should be that of giving a person the choice of taking it or not as he pleases. When I give tuberculin to a patient I expect him to take it, just as I expect him to obey when I tell him to go to bed, and if I am convinced of its usefulness, that is my privilege. As to waiting until the improvement under hygiene and diet have been tried, that is not fair; if we are convinced that it has a value in making results more permanent, it is our duty to our patients to do that which gives them not only the best immediate results, but the best permanent chance. The time element is a very important one. I have known of a number of patients who took it for only a few months and then discontinued it and were put into a state of instability. That has been my impression.

Another thing: The greatest disadvantage in tuberculin is that the doctor puts his faith in his hypodermic syringe and does not pay enough attention to the life of the patient. We should never lose sight of the fact that it is a more or less important adjunct. Sometimes the patient puts more faith in what he gets from the hypodermic syringe than from what he does for himself. We should make them believe that what they do is of more importance than what we can do, and that the hypodermic is an aid, and nothing more.

Dr. I. H. Hance, Lakewood: A few months ago I read a short abstract of an article written by a Frenchman, — only a few lines, but in line of what has been said about the auto-inoculation, — to the effect that in treating pleuritic effusions he drew 2 ccm., and then reinoculated his patient. He reported four or six cases of value treated in that way. In view of this, I asked Dr. Trudeau if anything had been done at Saranac Lake with auto-inoculation with the serum. It occurred to me that if that were drawn off as horses' serum is drawn it could be successfully used on the patient, — the serum being drawn from the body. This is in line with what Dr. Cohen said — leaving the serum under the blister for reabsorption and auto-inoculation that way.

H. S. Birkett, and J. C. Meakins, of Montreal, read a paper on

### THE VALUE OF VACCINE TREATMENT OF CHRONIC INFLAMMATORY DISEASES OF THE ACCESSORY SINUSES OF THE NOSE.

#### DISCUSSION.

F. C. Cobb, M.D., Boston: The question is a most complicated one and the results thus far obtained are both discouraging and encouraging. In a series of twelve cases at the Massachusetts General Hospital, all of the patients treated with vaccine made from a bacillus found in all cases, a general improvement was shown, and yet no absolute cure can be reported.

Dr. H. C. Reik, Baltimore: I think that if I had had the opportunity of drawing my conclusions after having heard these papers, I should not make them different. I regret that more was not said regarding the use of vaccines in relation to the nose and ears. The fact that the climatologists seem to have gotten away with the discussion may perhaps be explained by the well-known timidity of the rhinologists and the well-recognized modesty of the otologists. One point was brought out by Dr. Birkett, and confirmed by the negative reports of results found by both Dr. Cobb and Dr. Coakley, that one positive result is worth many negative findings. Then in his conclusion that treatment by vaccines will sterilize the accessory sinuses of the nose, — and there seems to be evidence to back up the statement, — he has given us something very important to think about. None of the essayists spoke of many positive results having been obtained in the treatment of the nose, — and if that be true, that we can bring about a state of sterility of the secretions, much can be

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accomplished by the treatment, even though some remains. None of us are afraid of sterile secretions from the nose. We have good reason to be afraid of infectious secretions from the nose.

DR. R. G. CURTIN, of Philadelphia, read a paper entitled

A BRIEF STUDY OF THE CLIMATOLOGY OF CANCER.

DR. THOMAS DARLINGTON, New York, N. Y.: I think there is very little value in the statistics which are collected to-day. Some time ago, in investigating cases of meningitis and the statistics as reported in the city of New York, three out of every five cases were found not to be cerebrospinal meningitis, but two were meningitis, two were pneumonia and one was enteritis. Now if our statistics are of the same character, we cannot depend upon them, and I feel that our cancer statistics are in the same nature. The one trouble with statistics of this character is that a great many people feel that cancer, like tuberculosis, is hereditary, and if a person dies with any symptoms of pneumonia or Bright's disease, that is usually placed on the death certificate and the cancer not mentioned because of its bearing on the future life of the children. That is a very common affair. I feel that we need some other method of collecting vital statistics, possibly that every case should be visited by an inspector and the certificate granted by him, instead of the physician. So far as people in the cities being subject to cancer, there is no doubt that where people are gregarious they cannot expect the immunity of a disease that follows the forest. I feel that our statistics are so faulty that we really know nothing about it, and I have made many investigations along that line. I only wish that we could do something to secure better registration in the various cities and states.

DR. C. L. MINOR, of Asheville: Speaking for the South and those sections where the negro greatly predominates, I am satisfied that proper vital statistics are utterly impossible. As to whether there are many cancers among the negroes or not remains to be proven, but I am sure that if any there may be, only a minute fraction would be reported. A large majority of all negroes, and especially of country negroes, have no doctor, or such doctors as would never report. But leaving the negro aside, statistics of disease in the rural whites, living, as they often do, miles from the nearest doctor, and he miles from the registering office, are out of the question. In the thickly settled country, with many officials and people trained to carry out registry law, it is different. But for the portions of our country which are purely agricultural and where anything but villages are rare, we need not anticipate sta'istics which would be of any value.

DR. FREMONT-SMITH, of Washington, D. C., read a paper on

INFECTIVE ENDOCARDITIS IN THE YOUNG.

DR. HENRY L. ELSNER, of Syracuse, read a paper on

THE CONTROL AND TREATMENT OF HYPERTENSION AND ARTERIOSCLEROSIS.

He stated that cardiovascular, more particularly arterial, changes furnish the fundamental morbid processes in the largest number of deaths after the fortieth year. There is a physiologic hyperplasia invading the intima during early life. We must consider the separate artery as an organ whose task is multiple, and the performance of its daily undisturbed work is attended even during the earliest years of life with a compensatory deposit for the preservation of these organs and the continuity of the circulation. As soon as this physiologic hyperplastic change of the intima, because of age, overwork, strain, toxemia or any other cause, is forced into a stage of hypertrophy, we have the beginning of arteriosclerosis. Hypertension upon which we fail to make a favorable impression by rational treatment is already associated with changes in kidney, heart or within the splanchnic area.

Hypertension will often lead to a strong suspicion of renal invasion. Dr. Elsner took up the influence of tobacco and quoted Sir Lauder Brunton's experiments in which a rise of blood pressure is noted after the use of nicotine. This is greater than from any known drug except suprarenal extract. This is due chiefly to contraction of the arterioles. Coffee also raises the pressure, and Dr. Elsner advocated the "caffeine-free" coffee. The dietetic management of these patients is most important. Many patients with angina pectoris have promptly lost their lives because of a single dietetic indiscretion. Dr. Elsner advocated the use of the Zander movements and believes that the use of the apparatus has not been properly appreciated by the profession in the treatment of hypertension. High-frequency currents were also highly recommended. The preparations of iodine were discussed, especially the newer ones, including sajodin, tiodin and eustenin. The alcoholic solution of nitroglycerin was advised and sodium and amyl nitrite. Dr. Elsner has given fifteen drops of nitroglycerin solution in desperate cases with benefit.

DISCUSSION.

DR. CURTIN said that in his investigation of angina pectoris three years ago he studied its relation to the use of tobacco. He then reported 60 fatal cases; of these he personally knew 8 men who did not use tobacco and in addition there were 15 women who presumably did not smoke, making 23 of the total of 60 persons, or about one third in whom tobacco could not be ascribed as the cause. One was noted as a great user of tobacco, and that is the only one in which my notes mentioned tobacco at all. Men who smoke and are leading active lives die of angina pectoris, and females who live similar lives die of it, too, and we may suppose that they do not smoke. In Japan almost the whole population smokes, — the boys begin at nine and the girls at ten, and yet angina pectoris is said to be not a very common disease in Japan. "I should say that, as far as my observation goes, tobacco is not a strong factor in the cause of the disease, but when the disease appears it may be aggravated very much by tobacco, or any other mild cause, particularly in regard to taking of food and drink. Anything that distends the stomach, and particularly food, may bring on an attack of angina pectoris. A bishop told me that when he got behind a horse and that horse began to ascend a hill he got an attack of angina pectoris; and there was another person in Philadelphia who said that when he got to a certain point where he used to run to catch a car, and saw the car stop still, he got an attack, showing that the imagination has a great deal to do with bringing on a paroxysm."

DR. ELSNER said that Hag, of Bremen, several years ago brought to the notice of the German profession a caffeine-free coffee, from which all but about 10% of the caffeine had been eliminated. Dr. Elsner had considerable experience with this caffeine-freed coffee, and is very positive that it is not followed by the baneful effects on the heart following the use of ordinary coffee, and it is a coffee which may be given without fear to those who cannot take coffee at night without being kept awake. It is not a substitute for coffee, but a true coffee. No difference is apparent in the bean and there

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is no difference in the taste when properly prepared. This coffee may be used by those who do not bear ordinary coffee well, those who have arteriosclerosis and irritable hearts.

Dr. Judson Daland and Dr. W. D. Robinson, of Philadelphia, read a paper on

ANGINA PECTORIS AND TOBACCO.

They stated that smoking by a novice causes a rise of blood pressure of 10–20 mm. Hg.; that in a moderate smoker the rise is about 10 mm. There is no sudden fall in pressure, but an increase in pulse-rate. Moderate smoking by one accustomed to its use shows no change in blood pressure or pulse-rate. These data were quoted from Emerson Lee. Experiments on rabbits by Adler were given. Osler, Krehl and Huchard were quoted as believing that angina pectoris may be induced by tobacco. Four cases were cited illustrating the relationship of tobacco to angina pectoris. Tobacco in excess induced the attacks, and its withdrawal diminished their number. Over-eating and the use of alcohol was a cause associated with tobacco, the latter being the chief cause. The result of exertion was noted. The conclusion was that long-continued excess of tobacco by smoking a large number of cigars daily produces that syndrome known as angina pectoris by causing degeneration or chronic inflammation of the terminal fibers of the vagus in the heart and a similar change in the middle coat of arteries. It is probable that other widespread and important pathologic changes are caused by chronic tobacco poisoning, many of which act as contributing factors in the production of angina pectoris.

DISCUSSION OF PAPERS OF DR. ELSNER AND DR. FREMONT-SMITH.

Dr. C. L. Minor, of Asheville, N. C.: Unlike some of my friends who have discussed the question, I am not a smoker, so that I am free of bias in the matter. Doubtless to the smoker these papers would recall the remark of the lady who said that, after all, in this world everything that was enjoyable was either expensive, unhealthy or wicked. What I wish to note in Dr. Elsner's paper is what he said of Dr. Rush's observations more than a century ago. We doctors have an opportunity to notice how terribly the nerve tension of the American people is increasing, and any one who will go to a picture gallery and compare the faces of the Americans of 1840, before railroads were everywhere, before the telegraph was known, or when the telephone did not keep our nerves on the *qui vive;* when the automobile and the airship were not dreamed of, and when we lived more slowly and more sanely, with those of the present era — when these and many other things are pushing us faster and faster forward — will notice the wonderful difference in the faces produced by these things and can well believe that there must also be a change in our bodies. There is a calmness and a quietness in the portraits of our grandparents, and, if we are not too young, of our parents, which we do not often see in these days when life is lived at lightning speed and calmness and meditation are strange.

I believe, therefore, that our profession can do much by warning their patients against this overtension and overworry and teaching them that such conditions of mind are bound to react on their body.

Dr. Hall, of Denver, Colo.: The case I wish to speak of is so much more impressive to me than any case of clinical reports would be. I saw some six years ago a physician then thirty-four years of age who had a suddenly developed attack of asthma following hypertension. He had been treated in Chicago, Liverpool and London for his asthma and finally returned to Colorado. He came to Colorado hoping for relief, but the climate gave him no help. I suggested that he try a hypodermic of adrenalin solution. He did not want to try it, but finally did. It gave him the first ten minutes of absolute relief from asthma that he had had for years. Since that time he has used 200 oz. in the course of 1:1,000 solution of adrenalin. The man would never go down town without two hypodermics in his pocket for fear of one breaking. He has at times taken sixty hypodermics in twenty-four hours. I had occasion to examine him a month ago and went over his arteries. His arteries are soft, his blood-tension was 132, entirely within the normal limits. I asked one or two other clinics to examine his arteries and they found them absolutely normal. I asked Dr. Stevens, who is one of our noted clinicians, to examine his arteries to see if there are any indications of the use of adrenalin. There was no indication of it. He has recovered from his asthma and gained 77½ lb. over his lowest weight, weighs 190 lb. now, and is ready for his practice of medicine.

I wish to say very briefly that I certainly agree with the doctor, in examining the heart, that tobacco has an influence upon it. I think I can tell the time of the year when May comes because of the number of teachers who come in all tired out. In the same way I can tell when a financial panic is pending by the number of men who are in heavy business who get anxious about the situation and smoke, — the kind of men who smoke fifteen or twenty cigars in a day and then wonder why the heart is affected. One man whom I knew lost two million dollars, and his heart dilated until it was two inches to the left of the left nipple. By cutting off his tobacco, and the closing up of the panic, and his final resignation to the loss he had suffered, and a treatment at Carlsbad, he was finally restored. I think Osler says that angina pectoris is common among doctors; I have not yet known any doctor to have it over the loss of two million dollars in the panic.

Dr. J. M. Anders, of Philadelphia, Pa.: Dr. F. Fremont-Smith included under the title of infective endocarditis only ulcerative endocarditis. On the other hand, certain writers are in the habit of including under the same caption both forms of acute endocarditis. It seems to me that we are in need of a classification that should be universally adopted. During childhood ulcerative endocarditis is more often associated with acute articular rheumatism than any of the other infective diseases of early life. There is a surgical group of cases due to bone diseases, to skin infections and particularly osteomyelitis, which group is not uncommon in young subjects, and I am sure frequently overlooked. Dr. Smith's cases belong to that group known as "recurrent ulcerative endocarditis," perhaps the least difficult of all forms to diagnosticate. Again, in a case of chronic endocarditis, the development of a septic condition, even in the absence of a septic focus elsewhere in the body, justifies the clinician in making a clinical diagnosis of ulcerative endocarditis. The cases in which the cardiac signs are unusually prominent are most readily recognized, but in my experience these cardiac signs are most indefinite as a rule, and, while we hear much about the change in the character of the murmurs due to chronic endocarditis, I have been struck by the fact that more commonly than a noticeable change in the character of the murmur there is present a moderate degree of secondary dilatation of the left ventricle. I think this is a point that is probably often overlooked. I was glad to hear Dr. Elsner lay down that important clinical truth that hypertension is not the sole cause of angina pectoris, but, on the other hand, cases of hypertension may manifest this

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dangerous condition. He spoke of the case of hypertension that could not be readily relieved by treatment, and that cases of that sort were to be regarded as instances of hypertension due to arteriosclerosis. This is true provided that the treatment employed is entirely appropriate, but as he so well said, unless one gives massive doses of nitroglycerine or other arterial relaxants, in many of these cases the arterial spasm is not relieved and then we are apt to confuse an arterial spasm with high tension due to arterial changes. Of this I have seen a number of illustrations.

A word with reference to the influence of tobacco as a cause of angina pectoris. I quite agree that it may be, although rarely, the principal factor in bringing about this grave condition. But without exception in my experience the cases in which it has seemed to stand in an etiologic relation, other causative agencies have been at work and easily recognizable. For example, a man suffering from aortic incompetency developed angina pectoris after smoking strong cigars, and quite recently a case of arteriosclerosis of moderate degree associated with marked arterial spasm fell under my observation, and in that case the use of strong cigars seemed to excite an attack of angina pectoris; at all events, treatment by rest, removal of the weed and by small doses of nitroglycerine led to a practical cure. We all know, as has been said by Dr. Elsner, that tobacco rapidly raises the arterial tension. It does so by inducing spasm of the arteries, and as the result of my observation for many years I believe that this is the most important influence of tobacco. I am aware that certain writers contend that nicotine produces widespread degeneration of the aorta in animals and that it causes arteriosclerosis of the coronaries. I have never seen a case of coronary disease that I could attribute solely to the use of tobacco. I have, however, as Dr. Curtin has so well said, seen many cases of rather marked arrythmia with accelerated action of the heart due to smoking, but this is an entirely different condition from true coronary disease, because the removal of the tobacco in these cases is invariably followed by a normal pulse-rate and the disappearance of the arrhythmia.

DR. H. L. ELSNER, of Syracuse, N. Y.: I think it is particularly those cases in which there is an hereditary tendency that are influenced by tobacco. It is pretty difficult to say that tobacco is provocative of angina, but we do know that many of these cases get better when we drop the tobacco.

In regard to the x-ray, I am glad to see this demonstration which Dr. Daland made. I think we use the x-ray too little.

With regard to the frequency of angina pectoris, women have it more rarely than men. For instance, in our statistics from Central New York, in the 44 cases of angina that were included, there were only three or four women. They bear angina pectoris long because they can relax better than men; they have less weighty responsibilities; they know how to rest; that is the reason why they have it less and live longer.

Now with regard to the good bishop's experience, there is a large psychic element. I know of a miller who never had an attack in his mill, but the moment he walked outside the mill against the wind he had an attack. I know a physician who recently consulted me, and said: "I may go to a medical meeting and walk home with my colleagues and I never have it, but if I go alone I have the pang." Angina may exist without the fear of death.

With regard to the aortic second accentuation there are a very few cases of hypertension which have existed for a very long period of time in which, as Sir Lauder Brunton says, the door is not slammed. This is likely to be the case when the aortic cusps are closed after the heart has made the attempt to overcome the obstruction in the periphery.

DR. JUDSON DALAND, of Philadelphia, Pa.: As angina pectoris is merely a syndrome; it naturally has many causes, and the object of this paper is to point out that Case 1 clinically seems to demonstrate that tobacco was the chief cause; and that in Cases 2, 3 and 4, all relatives, presented multiple causes but that tobacco was the chief cause, Cases 2, 3 and 4 all being brothers, and the sister, fifty-two years of age, was without and did not use tobacco.

I desire also to make clear the fact that tobacco was perfectly able to produce neuralgic effects. That is known to all of us, I am sure. I also agree with Dr. Elsner regarding the therapeutic importance of sleep in hypertension and arteriosclerosis; the inability of possible control of hypertension by any of the ordinary methods except those directed to the removal of the poison by measures such as the hot-air bath, etc. In these toxic cases nitroglycerine and the nitrites have not in my own hands been successful in attempting to lower high blood pressure.

At the last business meeting the following officers were elected for the ensuing year: President, Dr. John Winters Brannan, of New York; vice presidents, Dr. Will Howard Swan, of Colorado Springs, and Dr. John H. Lowman, of Cleveland; secretary and treasurer, Dr. Guy Hinsdale, of Hot Springs, Va.; representative on the executive committee of the ninth Congress of American Physicians and Surgeons, Dr. Roland G. Curtin, of Philadelphia.

It was decided to hold the next annual meeting in June, 1911, at Montreal, Canada.

## Book Review.

*Ionic Surgery in the Treatment of Cancer.* With a Chapter on Ionization in Surgical Tuberculosis and in Hemorrhoids. By G. BETTON MASSEY, M.D., Attending Surgeon to the American Oncologic Hospital; author, "Conservative Gynecology and Electro-Therapeutics"; Fellow and former President of the Electro-Therapeutic Association; Member of the American Medical Association, etc. New York: The A. L. Chatterton Company. 1910.

Here is a book of two hundred and forty-three pages, written in all earnestness and simplicity by an author who remarks in the fifth line of his preface that his method "was first presented to the medical world in a paper read before the Philadelphia County Medical Society Jan. 9, 1895." Ionic surgery is a method of electrolysis. It has its limitations and its advantages; it appears to cure small superficial malignant growths; it is little effective in the case of extensive, deep-seated disease. Those surgeons and patients who dread the knife, who cannot afford radium and are skeptical of the x-rays may turn for relief to the promises of ionic surgery.

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THE BOSTON

# Medical and Surgical Journal.

THURSDAY, NOVEMBER 17, 1910

*A Journal of Medicine, Surgery and Allied Sciences, published at Boston, weekly, by the undersigned.*

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## THE SUPERHEATED AMERICAN HOUSE.

THE season of superheated houses has again arrived. As soon as the bracing crispness of the autumn air begins to exert its normal stimulus on the heat-producing power of the human body, the average American householder lights his furnace fire, raises the thermometer in his rooms to 76° or more, sits in those rooms all the evening, with the additional heat of a fiery kerosene lamp baking on his head, and then wonders why he shivers when he goes outdoors to his work in the morning and why in a few days he develops a typical "fall cold." Not only are most private houses made thus uninhabitable, but nearly all public buildings and institutions are similarly superheated by steam or hot air.

Nor is the temperature the whole or even a major part of this evil. Thanks to the heating devices which American ingenuity has invented, the atmosphere in such buildings is usually about twice as dry as that in the desert of Sahara. And this is literally true, for the mean humidity in the desert is 30, and that in a steam- or furnace-heated house often runs as low as 16. Any one who has had experience with potted plants indoors knows the rapidity with which water evaporates from their saucers. With like avidity the parched air of our houses absorbs moisture from our skins and from the mucous membrane of our respiratory tract, with consequent drying and congestion, which prepare the way for the entrance of infection.

The human organism is a cunning machine, with possibility of adaptation to a wide range of conditions, but it will not stand such treatment. It does its best for a time, but sooner or later comes a series of "colds" and the establishment of the chronic American nasopharyngeal catarrh. Superheated houses and dry air are responsible for these ailments far more than the much-maligned east wind, which is really one of the mitigating factors that make our climate endurable, because it brings moisture "from the caves of the misty Atlantic."

In noteworthy contrast to our methods is the English fashion of doing. In England the furnace is almost unknown. Houses are heated by open fires, or occasionally by stoves, and seldom heated above 60° at that. The English air is so much moister than ours — thanks to the Gulf Stream which we furnish — that it oozes perennially, with the result that verdure is greener and more luxuriant, flowers brighter and complexions far clearer and ruddier than in our country. The people are not afraid of cool moist air, and they take it into their houses without robbing it of its humidity by steam-heat.

Let this diatribe not be interpreted as inexorable anathema or unqualified praise. Doubtless there should be a desirable middle course between the American and the English custom. The English habit perhaps predisposes to the rheumatoid diseases; ours certainly leads to colds, catarrh and bronchitis. The heat of our houses upsets our temperature-regulating mechanism so that it fails to work when we go out; and the dryness robs our superficial tissues of their juices. The cells of man's body are aquatic by heredity, and thrive better in contact with normal saline than in any other medium. To treat them as we often do is to deprive them of their birthright, and they are avenged upon us accordingly. It were a genuine advance in preventive medicine to provide for the cooling and humidifying of our houses as well as for their ventilation. The superheated American house is a medical barbarism and an anachronism in enlightened progress.

## PULMONARY HEMORRHAGE AT HIGH ALTITUDE.

IN a recent reprint from the reports of the United States Public Health and Marine-Hospital Service, Dr. F. C. Smith presents a statistical study of "pulmonary hemorrhage in the tuberculous at high altitude." This study is based on a series of 56 deaths from such hemorrhage during the past ten years at the Marine-Hospital sanatorium at Fort Stanton, N. Mex., which is situated at a height of 6,200 feet above the sea level. Tabulation and examination of these cases seem

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to indicate that pulmonary hemorrhage directly causes about 10% of the total mortality from phthisis; that such death is not proportionately more common in one decade of life than in another; that syphilis and chronic alcoholism increase slightly the liability to fatal hemorrhage, but probably only in proportion to the usual lesser vitality of such individuals; that massive hemorrhages are often and small hemorrhages seldom suddenly fatal; that recurrence of hemorrhage rarely or never occurs after bronchopneumonia develops; that fatal hemorrhage is seldom due to exertion, but commonly supervenes during sleep, in which case death is due more often to suffocation than to loss of blood.

Most commonly associated with such cases was organic cardiac disease, of one sort or another, which Dr. Smith regards as a frequent cause of the fatal issue, though not as a predisposing cause of hemorrhage. *A priori*, high altitudes should increase such deaths from cardiac failure during hemorrhage, since by diminishing blood-pressure they still further embarrass already imperfect heart-action. Actually, however, they do not seem to lead to more frequent pulmonary hemorrhage, since, in Dr. Smith's cases, hemorrhage was not more common immediately after arrival from sea-level.

Chronic types of phthisis are most liable to fatal hemorrhage; and hence negroes, in whom the disease usually runs a rapid course, showed a lower mortality from hemorrhage than whites.

Dr. Smith's conclusions seem in the main to bear out the general supposition that high altitudes are on the whole favorable for the care of hemorrhagic cases of pulmonary tuberculosis. When they are not so, it is because of their untoward effect on a pre-existent cardiac lesion. In cases with such condition, physicians should be particularly careful in recommending a high altitude, on account of its depressing action on the heart.

## AN ISOLATION PAVILION AT AIX-LES-BAINS.

MR. J. PIERPONT MORGAN has given $40,000 for an isolation pavilion in connection with the Municipal Hospital at Aix-les-Bains, France, and Dr. Paul Guyenot, head of the Zander Institute in that place, and one of the best-known authorities in Europe on physiotherapy, is now in this country, on Mr. Morgan's invitation, for the purpose of making a study of hospital construction and methods here. The plans for the pavilion have been drawn by T. Markoe Robertson, a grandson of the eminent New York surgeon, the late Dr. Thomas M. Markoe, who was the architect of the isolation wards on the roof of the New York Lying-In Hospital, whose admirably equipped new building was rendered possible through Mr. Morgan's generosity.

Incidentally, Dr. Guyenot has been requested by the French government to make an official report on the management of tuberculosis in America. In speaking of his mission here he recently said: "Mr. Morgan has been coming to Aix-les-Bains for treatment for fifteen years, and has been very generous to the little community of 8,000 people who live there. Ten years ago he gave $40,000 toward the fund for the new Municipal Hospital, and two years ago he gave an additional $8,000 for the equipment of a department for administering x-ray and electrical treatment. Now he is paying the total cost of the projected isolation pavilion, which is to accommodate twenty-two persons, and will be modeled after the isolation wards at the Lying-In Hospital here. It is not intended to be used as a sanitarium, and will be entirely free. This country is very much in advance of Europe in its measures to prevent the spread of tuberculosis. The hospitals I have seen in New York impressed me as exceedingly progressive and thorough in interior arrangements. Of course, in Europe there are not as a rule such large sums of money available for such institutions, though the Effendorf Hospital in Hamburg, which was erected regardless of cost, is a splendid monument externally. The interior, however, is not in accordance with the most approved modern ideas, and cannot be compared with either the New York Lying-In Hospital or the Rockefeller Institute Hospital, which I consider the two finest institutions of their kind in the world. The latter hospital is simply magnificent in its arrangements for studying special diseases and observing different methods of treatment. The arrangement of the isolation building there is remarkable. Physicians and nurses going to one room to attend a patient pass through corridors enclosed in glass, separating it from other rooms, and before leaving the building they take a bath and change their clothing, so that there is no risk of infection by the carrying of germs."

## MEDICAL NOTES.

A SPECIAL CLINIC. — The New York and New England Association of Railway Surgeons were given a special clinic at the New York Post-Graduate Medical School and Hospital, Nov. 4, 1910.

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Subsidence of Cholera in Italy. — During the week ending Nov. 12, only 13 new cases and 5 deaths of Asiatic cholera were reported from Italy. The subsidence of the epidemic there seems now to be well marked.

Typhoid Fever at Annapolis. — Ten cases of typhoid fever are reported to have developed recently among naval cadets at Annapolis, Md. No source for the epidemic has been as yet determined.

Poliomyelitis at Cornell. — Report from Ithaca, N. Y., states that two cases of acute poliomyelitis, the first to occur in that city this year, have recently developed among the students at Cornell University.

Award of the Davy Medal. — Report from England states that the Davy Medal has been awarded this year by the Royal Society of London to Theodore William Richards, Ph.D., Sc.D., professor of chemistry in Harvard College, for his researches on the determination of atomic weights.

Prevention of Water Pollution by Trains. — It is reported from Albany, N. Y., that, as a measure of protection to the water supply of New York City, the State Health Commission has ordered the closure of all washrooms on railroad trains during their passage through the limits of the Croton watershed.

United States Government Food Charts. — The United States Department of Agriculture has recently issued a series of food charts presenting in graphic form the composition and caloric value of various foodstuffs, with suggestions for the proper arrangement of dietaries. These charts, for use in schools, may be obtained from the Superintendent of Documents, in the government printing office, at a cost of $1 a set.

Two Living Centenarians. — Mr. Ransom Young, of Drums, in the township of Butler, near Hazleton, Pa., is said to have been born on Nov. 8, 1810. He is now very feeble, but on the recent anniversary of his birthday was taken to the polls and cast his vote in the state election.

Mr. Samuel Putnam, of New Salem, Mass., who is locally reputed to have been born on Nov. 9, 1806, is said to be in excellent physical health, though now failing mentally. He has never used alcohol or tobacco, and has always been an advocate of total abstinence and of universal peace. He has one surviving son, one grandson, and three great-grandchildren.

Association for Prevention of Infant Mortality. — The annual convention of the American Association for the Study and Prevention of Infant Mortality, which was held on Nov. 9, 10 and 11 at Baltimore, Md., was attended by representative physicians, sanitarians, sociologists and political economists from many states. At the opening session, addresses on "The Duty of a Nation to Its Potential Citizens" were made by Dr. William H. Welch, of Johns Hopkins Medical School; by Dr. Abraham Jacobi, of New York; by M. Jusserand, the French ambassador; and by Prof. Irving Fisher, of Yale College, president of the committee of one hundred on national health.

Copies of the "Medical Libraries" as a Gift. — Dr. C. D. Spivak, Denver, Colo., formerly editor of *Medical Libraries*, a bi-monthly publication devoted to the interests of medical librarians, which closed its somewhat irregular and spasmodic career in 1902, offers to send to all medical librarians and to all who are interested in medical journalism complete sets of Vols. 2, 3 and 4, and incomplete sets of Vols. 1 and 5, of that periodical for the asking. "All the sad editor desires in return is that these his dear departed ones be reverently laid out, decently shrouded, adequately coffined, properly epitaphed, securely inhumed and unostentatiously gathered unto their fathers."

Damages for Death under Chloroform. — On Nov. 11 a jury of the Supreme Court in New York City awarded a verdict for $3,000 damages in a suit brought against a physician by the mother of a patient who died under chloroform anesthesia. The doctor is alleged to have administered the drug to abate the boy's resistance to the application of leeches to an injured knee. Such use of a general anesthetic would, of course, be entirely unjustifiable. Whatever the facts in this case, the known dangers of chloroform are sufficient to warrant the cautious in the utmost reluctance from its exhibition under any circumstances.

Medical Addresses to School Superintendents. — At the opening session of the eighty-seventh meeting of the New England Association of School Superintendents, held in Boston last week, addresses were made by a number of physicians on problems connected with

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the health of school children. Dr. Eugene A. Darling, of Cambridge, Mass., assistant professor of physiology in Harvard College, discussed the desirability and methods of anti-tuberculosis teaching in the public schools; Dr. Jay Perkins, of Providence, R. I., described the proper instruction of the open-air school; and Dr. Cleaveland Floyd, of Boston, emphasized the value of such schools and the improvement in mental as well as in physical vigor of pupils sent to them. Dr. H. Lincoln Chase, of Brookline, Mass.; Dr. Lewis H. Palmer, of South Framingham, Mass.; and Dr. Gardner T. Swarts, secretary of the Rhode Island State Board of Health, spoke on the topic of "The Serious Consequences of Ignorance of Sexual Hygiene." It was voted to appoint a committee to investigate the methods of teaching this branch of hygiene in the public schools.

### BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston.— For the week ending at noon, Nov. 8, 1910, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 50, scarlatina 26, typhoid fever 29, measles 8, smallpox 0, tuberculosis 54.

The death-rate of the reported deaths for the week ending Nov. 8, 1910, was 13.90.

Boston Mortality Statistics.—The total number of deaths reported to the Board of Health for the week ending Saturday, noon, Nov. 5, 1910, was 193, against 215 the corresponding week of last year, showing a decrease of 22 deaths, and making the death-rate for the week, 14.94. Of this number 96 were males and 97 were females; 188 were white and 5 colored; 111 were born in the United States, 78 in foreign countries and 4 unknown; 41 were of American parentage, 129 of foreign parentage and 23 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 39 cases and 1 death; scarlatina, 38 cases and 1 death; typhoid fever, 28 cases and 8 deaths; measles, 8 cases and 1 death; tuberculosis, 60 cases and 17 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 20, whooping cough 0, heart disease 33, bronchitis 5. There were 12 deaths from violent causes. The number of children who died under one year was 32; the number under five years, 43. The number of persons who died over sixty years of age was 59. The deaths in public institutions were 76. Cerebrospinal meningitis, 2 cases and 1 death. Anterior poliomyelitis, 2 cases.

Of the above infectious diseases the following were non-residents: Consumption, 1 case and 1 death. Scarlet fever, 5 cases. Typhoid fever, 3 cases.

Deducting deaths of non-residents, the total is 176 and the death-rate is then 13.62.

Nomination for Medical Examiner. — Dr. Henry J. Walcott, of Concord, Mass., was last week nominated by the governor as medical examiner for the sixth Middlesex district.

Legacy to the New England Hospital. — The will of the late Lucretia Gore French, of Boston, filed in probate last week, contains a bequest of $2,000 to the New England Hospital for Women and Children.

Seizure of Cocaine by the Police. — At a raid made last week by the police on a den in Roxbury, $500 worth of cocaine was seized, with a number of pipes and other utensils employed by habitués, of whom seven were arrested on the premises. The prisoners will be arraigned on the charge of keeping cocaine for illegal sale and of unlawfully disposing of the drug. It is stated that in the district where the seizure was made there are numerous similar resorts which will probably be raided within a short time. It is both surprising and discouraging to find how difficult is the eradication of so repulsive a vice from our community.

Fairs for Charitable Institutions. — During the past week several sales or fairs for the benefit of charitable institutions in or near Boston, which we announced in the latest issue of the Journal, were successfully held, and substantial sums of money were made for the Cullis Consumptives' Home, Dorchester; for St. Monica's Home, Roxbury; for the Somerville (Mass.) Hospital, and for the Day Nursery, Brookline, Mass. The work of these institutions was also inspected by patrons of the fairs. On Tuesday of this week, Nov. 15, was also held by the Board of Directors of the Blind Babies' Aid Society a Thanksgiving sale for the benefit of the Boston Nursery for Blind Babies, now installed in its new building in Jamaica Plain. This building is free from debt, but the institution is dependent for its maintenance on voluntary private contributions.

Milk and Pure Food Convictions. — In the Boston Municipal Court last week, ten local milk dealers were fined sums varying from $10 to $60 each for having in their possession for sale skimmed milk or milk not up to the minimum

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standard required. Before the same court another dealer was fined $15 for offering for sale oleomargarine without displaying a notice to that effect; and still another was fined the same amount for selling molasses vinegar as cider vinegar.

In the Malden (Mass.) District Court, a Maine contractor was accused of shipping for sale milk below the required standard. In defense his counsel alleged that the milk as shipped was not intended for sale until after being mixed with other and stronger milk. This plea was not allowed by the court, and the defendant was fined $15, from which he appealed.

Meeting of the Improvement Society. — A meeting of the Boston Society for Medical Improvement was held in Sprague Hall, Boston Medical Library, on Nov. 14. Dr. M. G. Seelig, of St. Louis, read a paper on "The Doctrine of Vitalism in Medicine," which will be published in a later issue of the Journal. This paper was discussed by Dr. James J. Putnam. Memorial addresses on the life, work and character of the late Dr. Herbert Leslie Burrell were then made by Dr. E. H. Bradford, Dr. G. H. Monks, Dr. F. S. Watson, Dr. J. B. Blake, Dr. M. H. Richardson and Dr. Paul Thorndike. Dr. Monks showed some particularly interesting photographs of the hospital ship *Bay State*, which Dr. Burrell equipped and commanded during the war between the United States and Spain in 1898, and with which he rendered valuable and efficient service not only to the troops cared for in Cuba, but to the cause and reputation of American military and naval surgery.

Typhoid Fever at Austin Farm. — There has recently been a small epidemic of typhoid fever among attendants at the Insane Hospital at Austin Farm. Fourteen cases have occurred in nurses and employees, of whom eight are now at the Boston City Hospital. There has been none among the 840 inmates of the institution. All the cases are mild and there have been no deaths. No new cases have been reported within the past ten days, and it is believed that the spread of the disease is now under control. The original source of the infection has not yet been discovered, and in the absence of evidence pointing to the food or water supply, it is believed that the epidemic may have had origin in a typhoid carrier recently come to the hospital. Investigations are in progress to determine if possible the identity of this suspected carrier. Such an episode re-emphasizes the desirability of protecting the attendants of an institution, where opportunity is rife for spread of infection from such transient source, by means of antityphoid inoculation.

The Cost of Pure Milk. — On Nov. 10 and 11 was held in Boston a conference between the mayors and heads of departments of many of the cities of New England. This conference, which was called to promote uniformity of purpose and co-operation of method in the prosecution of various civic improvements in the several municipalities, was addressed on the subject of "The City's Inspection of its Milk Supply" by Prof. W. T. Sedgwick, of the Massachusetts Institute of Technology, who pointed out that adequate enforcement of laws for insuring the safety and cleanliness of milk is bound to raise the price of milk for the consumer. In view of the importance and high food value of milk, however, he believed such increase of cost to be worth paying. Dr. Thomas E. Maloney, of the Fall River (Mass.) Board of Health, described the system of milk-supply in his city, and declared that within a few years the number of tuberculous cattle in the vicinity were reduced from 37½ to 4%. Addresses on the same topic were made also by Dr. Durgin, of the Boston Board of Health, and by Mr. Jordan, of the city inspection bureau.

### NEW YORK.

Increase in Minimum Rates for Medical Attendance. — At a recent meeting of the Suffolk County (Long Island) Medical Society, it was decided, in view of the increased cost of living, to advance the minimum rates for medical attendance. In some parts of the schedule of charges the increase is 25% and in others, 50%.

Yellow Fever One Hundred Years Ago. — The centennial of the founding of St. James' Protestant Episcopal Church, on Madison Avenue, at the corner of Seventy-first Street, which was celebrated on Nov. 13, brings to mind the great yellow fever epidemic of a hundred years ago. In consequence of the prevalence of the disease, many residents of the city were led to build country homes on the shores of the East and Hudson rivers, and as a considerable number of them were parishioners of Trinity Church, the latter gave substantial aid to the building and endowment of two rural churches, St. James' on the East Side, and St. Michael's on the West.

Decline in Birth-Rate. — In a recent report F. D. Beagle, director of the Division of Vital Statistics of the State Department of Health,

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states that while, with the constant decrease in the death-rate, it would be natural to expect an increasing birth-rate, it appears that the slight increase from year to year shown by the returns filed in New York state is due to the improvement in the registration, as undoubtedly there is a tendency to a decline in the birth-rate. During the first six months of the present year there was over 10% increase in the registration of births over the corresponding period of 1909. Thirty-seven cities in the state show an increase, and twelve report fewer births than last year. The registration in the latter is at present being investigated by representatives of the department. It is most gratifying to be able to say, he remarks in conclusion, that at the present time there is the most complete registration of births in the state since the establishment of the State Department of Health in 1880.

ENLARGEMENT OF MONTEFIORE HOME. — At the annual meeting of the board of trustees of the Montefiore Home and Hospital for Chronic Invalids, held on Nov. 6, it was announced by the president, Jacob H. Schiff, that $850,000 had already been subscribed for the new buildings which it is purposed to erect for the institution. As the present property of the home, at Broadway and 138th Street, has been sold for $525,000, this leaves but $125,000 to make up the $1,500,000 which it is estimated will be needed for land, erection and equipment at the new location, and the required amount, it is believed, will be raised at an early date. Four blocks, comprising an area equivalent to 162 city lots, have been purchased in the Borough of the Bronx, and, in view of the benefit to the community conferred by the Montefiore Home in the past, the municipal authorities have consented to the closing of the streets between two of the blocks. The new buildings will accommodate some six hundred patients, and will probably be completed within two years. In the meanwhile the work of the institution will be carried on as usual in its present quarters, as it has been stipulated that the purchasers shall not take possession until the new buildings are ready for occupancy. In order to have incorporated in these the most approved modern features, Dr. Wachsmann, the medical superintendent of the home, has recently made a study of similar institutions in Berlin and other European cities, and in making the plans he and the building committee will have the valued assistance of Dr. S. S. Goldwater, the superintendent of the fine new Mount Sinai Hospital.

THE TUBERCULOSIS PREVENTORIUM FOR CHILDREN. — Contributing to the development of the Tuberculosis Preventorium for Children, which last April was removed from Lakewood to Farmingdale, N. J., the estate of Albert Brisbane, through Arthur Brisbane, has presented to the institution 64 acres of land and a free lease for twenty-five years of the Windsor stock farm adjoining, which comprises 240 acres under cultivation. As the physicians and architects of the preventorium found it necessary to have twenty acres more to obtain an ideal site, Mr. Brisbane has just bought an adjoining farm of 104 acres, to be able to provide the twenty additional acres desired. The total gift, therefore, comprises 84 acres in fee simple and 240 acres on a free lease for twenty-five years. He has also presented to the preventorium cows, wagons, furniture and other accessories. Nathan Strauss has already contributed $50,000 for model buildings to be constructed on the farm, while the Board of Health Auxiliary connected with the Association of Tuberculosis Clinics has subscribed $4,500 to build an additional open shack, for which it will select the children. The auxiliary has also subscribed for the support of the shack. To complete the plans to care for 400 children at a time, the preventorium will require $50,000 more for buildings and additional memberships yielding $85,000 a year. This institution, which, it will be remembered, takes only children who have not yet contracted tuberculosis, but whose condition indicates that they would readily fall victims to the disease, has already been successful in 212 children, aged from four to fourteen years, the average stay being about three months and the gain in weight from four to sixteen pounds.

## Current Literature.

MEDICAL RECORD.

Nov. 5, 1910.

1. *STEIN, J. B. *The Ehrlich-Hata (606) Preparation (Therapia Sterilisans Magna). A Review of Some of the Reports made by German and French Physicians upon the Treatment of Syphilis by this Preparation.*
2. ABBE, R. *Custodianship of the Watch and Bible of Dr. Benjamin Rush, with Biographical Notes.*
3. BUGBEE, H. G. *Complete Subparietal Rupture of the Kidney, with Report of a Case.*
4. BARNES, G. E. *The Nonentity of Acute Dilatation of the Stomach.*
5. SCOTT, C. D. *Report of Two Cases of Tetanus following Vaccination.*
6. ABRAMS, A. *Asthma and the Lung Reflexes of Abrams.*

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1. Stein reviews the reports of a number of German and French clinicians on the treatment of syphilis with "606." The reaction following injection varies greatly in severity; its important characteristics are pain radiating to the back and legs, local inflammation at the site of injection, fever (as high as 102.°5), headache, nausea and vomiting, tormenting thirst, diarrhea (not constant) and skin eruptions, especially a reddening and swelling of the luetic macules and papules (the so-called Herxheimer reaction).

Siesskind found that the spirochetes usually disappeared from lesions in from twenty-four to thirty-six hours after injection, but occasionally persisted for six or seven days. Before disappearance their vitality is greatly compromised, as indicated by their swollen appearance, diminished motility and loss of characteristic refringence. Evidence on the behavior of the Wassermann reaction under "606" is not convincing. Emery says that it slowly and progressively disappears without the oscillation encountered in mercurial cures. Hoppe and Schreiber observed that after fifty days 84.6% of their cases previously positive had become negative. The earliest the reaction was negative was after four days, the latest after seventy days.

Alt treated a number of primary lesions with a single injection (0.3 gm.) with immediate and astonishing results. The initial chancre with its induration showed marked retrogression after a few days. Mucous patches, eroding syphilides and other secondary manifestations disappeared in from twelve to thirty-six hours. An enormous gummatous ulcer of the leg was more than half healed five days after injection (Ehrlich). Remarkable results are reported in visceral lues and in hereditary syphilis, also in syphilis of the nervous system (Ehrlich forbids the use of the drug in the latter).

Blaschko gives the following indications for "606": (1) Lesions refractory to mercury; (2) relapse immediately following mercury "cure"; (3) continual relapses; (4) idiosyncrasy toward mercury; (5) malignant syphilis with destructive and dangerous lesions; (6) the appearance of a chancre in a first attack of syphilis. Contra-indications are old age, affections other than syphilis of the kidney, heart, liver, spleen or lung, advanced aneurysm, optic neuritis, grave cerebral lues. [L. D. C.]

### New York Medical Journal.

Nov. 5, 1910.

1. Fordyce, J. A. *Further Observations on the Use of the Ehrlich-Hata Preparation "606" in the Treatment of Syphilis.*
2. Guilfoy, W. H. *Vital Statistics in the Promotion of Public Health.*
3. Brown, E. M. *Tuberculosis of Bones and Joints.*
4. Swett, P. P. *The Diagnosis and Treatment of Tuberculous Joints.*
5. Pettey, G. E. *A Rational Basis for the Treatment of Narcotic Drug Addiction.*
6. Wholey, C. C. *The Kind of Inebriate who needs State Care and the Kind who needs the Private Sanatorium.*
7. Nascher, I. L. *Tissue Cell Evolution.*
8. Williams, T. A. *Modern Neurology of Spiritualism and Possession.*
9. Sallom, A. K. *A Blood Pressure Record.*
10. *Hough, W. H., and Lafora, G. R. *The Cerebrospinal Fluid in Acute Anterior Poliomyelitis.*

10. Hough and Lafora give out a preliminary report of their findings in the cerebrospinal fluid of eleven cases of acute anterior poliomyelitis occurring in Washington, D. C., last summer. In all the cases the fluid was perfectly clear, in most of them the pressure was slightly increased, the protein content was increased and there was a moderate pleocytosis. In three cases examined during the first stages of the disease there was observed the highest proportion of polymorphonuclears (18% in one of them). The polynuclears disappeared after the fifth or sixth day of the disease through the phagocytic activity of the macrophages, which latter sometimes contained twenty or more chromatin bodies, probably the remains of the leucocytes. These chromatin bodies resembled morphologically the bodies described in certain protozoan diseases affecting the nervous system, e. g., the Leishman-Donovan bodies of kala-azar and the Mott bodies of Jinga trypanosomiasis. Late in the disease there were observed many lymphocytes, some plasma cells, a few macrophages and occasionally mast cells. The writers consider the similarity in histopathology of the spinal cord and fluid of anterior poliomyelitis and some protozoan diseases affecting the nervous system an argument in favor of the protozoan nature of the virus of poliomyelitis. [L. D. C.]

### The Journal of the American Medical Association.

Nov. 5, 1910.

1. Mayo, C. H. *The Prophylaxis of Cancer.*
2. Loeb, L. *Etiology of Cancer of the Skin.*
3. *Pusey, W. A. *Treatment of Malignant Growth of the Skin from a Dermatologic Standpoint.*
4. Bloodgood, J. C. *Surgical Treatment of Cutaneous Malignant Growths.*
5. Mallory, F. B. *Pathology of Malignant Diseases of Non-Epithelial Formation.*
6. Fordyce, J. A. *The Pathology of Malignant Epithelial Growths of the Skin.*
7. *Baar, G. *Preliminary Report on the Clinical Significance of Indicanuria.*
8. *Post, W. E., and Nicoll, H. K. *The Comparative Efficiency of Some Common Germicides.*
9. McCrae, T. *The Principles of Hydrotherapy.*
10. Friedenwald, H. *Teaching the Student the Operation of Paracentesis of the Drum Head.*
11. Coppez, A. J. *Tetanus Successfully Treated with Large Quantities of Antitoxin.*
12. Brown, S. *The Muffled Room in the Treatment of Acute Insanity.*

3. Pusey thinks that of all the remedies used internally for cancer, arsenic is the only one of possible benefit. He believes that all early cases are by no means suitable for excision. The chief danger of the knife is incomplete removal. The superficial caustics, such as phenol and silver nitrate, are dangerous because they really do not destroy deeply. Pyoktamin favors epidermization and is often harmful. He also advises against curettage, electrolysis and liquid air as suitable only in a very limited type of case. He is a firm believer in the beneficial action of arsenious acid in 50 or 75% mixture with 50 or 25% powdered acacia and water. Radium he considers no more efficient than well-applied x-ray, which, however, he advocates for certain types of superficial cases.

7. Baar found that ether narcosis had no influence on the excretion of indican, but in all operations in which there was cutting or rough handling of the intestines, as in entero-enterostomies, there was excessive excretion of indican in the urine for a week or more following the injury. Moderate handling of the intestines during the course of an ordinary abdominal operation had no influence. He explains this by stating that trauma impairs the absorptive powers of the mucosa and thereby increasing intestinal putrefaction. An analogous condition exists often in colitis and in extensive enteroptosis in which we find increased indicanuria.

8. Post and Nicoll carried on a series of extensive experiments to determine the efficiency of the various germicides, and conclude as follows: Argyrol and protargol are not so active in concentrated solutions as ordinary silver nitrate in 1 to 5,000 or even 1 to 10,000 solution. Corrosive sublimate is slow of action, — over thirty minutes, — but is effective even in high dilutions. Creolin, lysol and phenol are very ineffective under thirty minutes. Five per cent phenol is, however, very effective in less than one minute. Iodine is effective in less than one minute. Formaldehyde is slow of action in 1 or 2% solution. Alcohol is effective in solutions of 50% or higher. Boric acid in saturated solution is non-effective even after twenty hours, also potassium chlorate. Glycerine has almost no germicidal power. The same is true of distilled water. [E. H. R.]

### The Journal of Infectious Diseases.

Vol. 7. No. 5.

1. Bel, G. S., and Couret, M. *Balantidium Coli Infections in Man.*

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2. LOEB, L., AND FLEISHER, M. S. *The Influence of Extracts of Anchylostoma Caninum on the Coagulation of the Blood and on Hemolysis.*
3. PRESCOTT, S. C., AND BREED, R. S. *The Determination of the Number of Body Cells in Milk by a Direct Method.*
4. *HOLM, M. L., AND GARDNER, E. A. *Formaldehyde Disinfection with Special Reference to the Comparative Value of Some of the Proprietary Products.*
5. FULLER, C. A. *The Bacterial Integrity of Collodion Sacs.*
6. STEINHARDT, E. *The Value of Collodion Membranes as Filters.*
7. BUCHANAN, R. E., AND TRUAX, R. *Non-Inheritance of Impressed Variations in Streptococcus Lacticus.*
8. *TUNNICLIFF, R. *Observations on the Anti-infectious Power of the Blood of Infants.*

4. Holm and Gardner have investigated certain proprietary disinfection outfits in regard to their loss of formaldehyde, their power to penetrate, and their efficiency as disinfectants. They found that most of the products they examined were ineffective bactericides when used as recommended, and that in many of them there was considerable loss of formaldehyde.

8. The writer estimated the opsonic indices and phagocytic activity of a series of babies, and contrasted these with similar estimations in adults. She concludes that although at birth babies' resistance to infection as measured in these two ways is only a little below that of adults, the anti-infectious power rapidly falls and does not approach that of adults until the third year is reached. [G. G. S.]

THE LANCET.

OCT. 8, 1910.

1. MOTT, T. W. *The Huxley Lecture on the Hereditary Aspects of Nervous and Mental Disease.*
2. MORISON, A. *On the Meaning of the Audible Signs in Mitral Stenosis.*
3. *PASTEUR, W. *Active Lobar Collapse of the Lung after Abdominal Operations. A Contribution to the Study of Post-operative Lung Complications.*
4. HORNE, W. E. *Ehrlich-Hata "606."*

3. Pasteur describes a condition which he calls "active lobar collapse of the lung." This, which frequently occurs in fatal cases of diphtheria, when there is death from paralysis of respiration, according to the writer is a not uncommon sequel to severe abdominal operations where there is paralysis of the diaphragm and lower muscles of respiration. The collapse is usually of the lower lobes. The onset of an attack of this sort is usually sudden, but not always so. There is sudden dyspnea and cyanosis, pain, diminished breath sounds over the affected side and exaggerated breathing over the sound side. One of the most striking signs is the shifting of the apex beat toward the affected side. Another feature of some importance is the rapid disappearance of the symptoms and the return of the chest to normal. He cites several illustrative cases. [J. B. H.]

OCT. 15, 1910.

1. MARSH, H. *An Address on the Education of the Student of Medicine.*
2. *LISTER, T. D. *Industrial Tuberculosis.*
3. FLEIG, C. *Mineral Waters as Artificial Sera. A Short Account of Investigations on the Question of Mineral Waters as Artificial Sera and of Injections of Mineral Waters into the Tissues both from a Physiological and a Therapeutic Point of View.*
4. CARTER, M. *Ulcerating Granuloma of the Pudenda a Protozoal Disease.*
5. BOYD, W. *A Case of Tumor of the Pituitary Body.*
6. MALCOLM, J. D. *A Case of Carcinoma of the Cecum Removed after a Preliminary Evacuation of a Fecal Abcess and an Ileosigmoidostomy; Patient Well a Year Later.*
7. SAVILL, A. F. *Treatment of a Uterine Fibroid by X-Rays.*
8. PARKER, G. *A Case of Uremia with Facial Paralysis and Intestinal Ulceration.*
9. GUYENOT. *Radium and Radio-Activity.*

2. Lister presents an elaborate series of tables giving the mortality from tuberculosis in the various occupations, dusty, sedentary and otherwise, and draws conclusions from them. Of more interest, however, are his remarks upon the anti-tuberculosis campaign in general. The treatment of early cases and isolation of advanced cases is, in his opinion, only a small part of what must be done. A regular and systematic inspection of all employees and of school children is essential. Teaching as regards health among the poor and the regulation and supervision of dangerous occupations are all-important. A knowledge of sanatorium methods must be spread broadcast. The lessons of the sanatorium must be taught and enforced in the home and in the work shop. [J. B. H.]

BRITISH MEDICAL JOURNAL.

OCT. 15, 1910.

1. MARSH, H. *An Address on the Education of the Student of Medicine.*
2. ROLLESTON, H. D. *Remarks on Acute Arthritis of Doubtful Origin.*
3. CODD, J. A. *Experiment and Observation in Medicine.*
4. *WAKELING, T. G. *On the Fever Caused by the Bite of the Sand Fly.*
5. RHYS, O. L. *Skiagrams of Multiple Renal Calculi and of Fractures due to Muscular Violence.*

THE BRITISH MEDICAL ASSOCIATION.

*Section on Diseases of Children.*

6. GARROD, A. E. *Introductory Remarks.*
7. COUTTS, J. A., *et al. Discussion on the Diagnosis and Treatment of Non-Tuberculous Joint Diseases in Children.*
8. *GAUVAIN, H. J. *The Conservative Treatment of Tuberculous Cripples.*
9. PARSONS, W. B. *Spinal Caries and Hip Disease: A Point in Differential Diagnosis.*
10. *BOX, C. R., *et al. Discussion on Infections of the Urinary Tract by Bacillus Coli in Infancy and Childhood.*
11. ZANGGER, T. *A Combined Quinine and Hydropathic Treatment of Whooping Cough.*
12. *D'ESPINE, A. *The Early Diagnosis of Tuberculous Bronchial Adenopathy in the Child.*
13. MCCAW, J. *Acetonemia: An Account of an Acute Attack in a Young Child.*
14. ELGOOD, O. M. *Human Milk and Breast Feeding.*
15. GRAY, H. T. *Lesions of the Isolated Appendix Vermiformis in the Hernial Sac.*
16. PRITCHARD, E. *Banana Flour as a Food for Infants.*
17. MURPHY, J. K. *The Radical Treatment of Tuberculous Disease of the Tarsus and Ankle-Joint.*

*Section of Anatomy.*

18. KEITH, A. *Introductory Remarks.*
19. SYMINGTON, J. *The Pharyngeal Tonsil.*
20. FRAZER, J. E. *The Early Development of the Eustachian Tube and Nasopharynx.*
21. GEDDES, A. C. *The Size of the Antrum and the Position of the Permanent Teeth.*
22. GEDDES, A. C. *Six Abnormalities from the Dissecting Room.*
23. WRIGHT, W., AND BENIANS, T. C. *The Anatomy of the Trigonum Vesicæ.*
24. RAMSTROM, M. *Emanuel Swedenborg as an Anatomist.*
25. GLADSTONE, R. J. *An Anencephalic Fetus, with a Meningocele and Facial Cleft.*
26. CRYMBLE, P. T. *The Muscle of Treitz and the Plica Duodeno-jejunalis.*
27. GLADSTONE, R. J. *A Cyclops and Agnathous Lamb.*
28. RUTHERFORD, N. C. *A Case of Congenital Absence of the Transverse Mesocolon.*
29. MCKENZIE, I., AND ROBERTSON, J. I. *Recent Researches on the Anatomy of the Bird's Heart.*

4. Wakeling describes "sand-fly fever" as a non-fatal three-days' fever with a week's convalescence due to the bite of the fly, Phlebotomus papatarii. It exists in

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Egypt, part of Austria, Malta and in Italy. The symptoms, aside from the bite itself, are tiredness, loss of appetite, malaise, headache, aching, temperature up to 104° F., and later well-marked anemia and loss of sight. There is a tendency to inflammation of sigmoid and joint cavities. The treatment is purely preventive.

8. Gauvain, in addition to describing the ordinary methods and his own of treating tuberculous caries of the spine, urges the need of medical attention to the child itself; he emphasizes the frequent neglect in educating such cripples and urges that this go hand in hand with treatment. This can be done better by especially selected and trained nurses than by any one else.

10. Box summarizes his ideas as to the treatment of colon infections of the urinary tract in children as follows: (1) Sufficient potassium citrate to make and keep the urine alkaline; (2) treatment by urinary antiseptics; and (3) treatment by serums and vaccines. Acute cases can be satisfactorily treated with potassum citrate alone. Chronic cases he finds very obstinate and resistent to all forms of treatment.

Pardoe, discussing this subject, believes that colon vaccines and other vaccines are of the greatest value in chronic infections.

12. D'Espine describes a sign which he considers of the greatest value in the early diagnosis of tuberculous bronchial glands. This sign is based on auscultation of changes in the breath and voice sounds at the level of the seventh cervical or first dorsal vertebra. When the child speaks in a low voice, the voice is accompanied by an added whispering sound localized to one or two vertebræ. There is also a bronchial quality of the respiration over this area. There may be dullness at this area associated with dullness at the level of the manubrium. The absence of râles and the presence of normal sounds at the apices will help to confirm the diagnosis. [J. B. H.]

Deutsche Medizinische Wochenschrift. No. 41.

Oct. 13, 1910.

This whole number of the journal is given up to papers on the treatment of syphilis with Ehrlich's preparation 606. These papers were presented at the eighty-second congress of German scientists and physicians which was held at Königsberg on Sept. 20, 1910.

The papers were by Drs. Neisser, Ehrlich, K. Alt, Schreiber, Iversen, Wechselmann, Orth, Miekley, Uhlenmuth, M. Margulies, C. Stern, W. Scholtz, A. J. Grünfeld, L. Michaelis, R. Volk and B. Lipschütz, Dohi, Grouven and others.

The papers by Neisser and Ehrlich cover the whole subject of the treatment of syphilis with this new preparation both from a practical and theoretical point of view. Ehrlich concludes by stating that the foundations are now safely laid; it remains for experience to decide on the value of the preparation. The other papers are on points of technic or personal experience with the drug. [C. F., Jr.]

Münchener Medizinische Wochenschrift. No. 36.

Sept. 6, 1910.

1. *Enderlen and Borst. *Surgery of Vessels and Transplantation of Organs.*
2. Finkelnburg. *Puncture of the Brain for Chronic Hydrocephalus.*
3. Neu, M. *A Method of Narcosis with Nitrous Oxide.*
4. Achelis, W. *X-Ray Diagnosis of Miliary Tuberculosis of the Lungs.*
5. Schwabe, K. *Effects of Arsenobenzol on Psoriasis and Lichen Ruber Planus.*
6. Riebold, G. *Use of a Few of the Newer Remedies in Cardiac Insufficiency.*
7. Mathes, P. *Coagulation Time of the Blood in Pregnancy.*
8. Tanaka, Y. *General Amyloid Degeneration in Japan.*
9. Holmgren, J. *Technic of the Compression Treatment in Pulmonary Tuberculosis.*
10. Schümann, E. *Injuries to the Hand from Machinery.*
11. Bodenstein, H. *Case of Peritonitis in Gonorrhea in a Man.*
12. Wilke, A. *Hematoma of the Small Intestines after Tapping for Ascites.*
13. Schoenborn, S. *A New Algesimeter for Practice.*
14. Perlmann, A. *A New Apparatus for Steaming the Face.*
15. Friedrichsen, F. *A Urine Measure for Diabetics.*
16. Weber, E. *Plethysmographic Studies under Bodily Work.*
17. Teske, H. *Paradoxical Movement of the Diaphragm.*
18. Köhler, F. *Diagnosis of Pulmonay Tuberculosis.* (Concluded.)

1. Enderlen discusses the technic of vessel surgery and then sets forth his indications for transfusion. He recommends it in severe losses of blood following injury, operation, childbirth and gastric ulcer, and for poisoning with illuminating gas. He advises against it in severe infections, tuberculosis, leukemia, and pernicious anemia, but does not give his reasons in detail.

Borst repeats the laws of organ transplantation established by others: that the transplanted organ must be fastened as soon as possible on to its source of nourishment and that if it is to survive long it must also receive early the stimulus to function. To these laws he adds that biochemical similarity of the individuals is of great importance. [G. C. S.]

No. 37. Sept. 13, 1910.

1. Payr, E. *Operative Mobilization of Anchylosed Joints.*
2. *Steinert, H. *Acute and Chronic Streptococcus Sepsis and its Relation to Acute Arthritis.*
3. Hering, H. E. *Function of the Cardiac Vagi in Humans.*
4. Schwartz, W., and Flemming, P. *Relation of Arsenolphenylglycin Pot. Iodide and Sublimate to the Wassermann Reaction.*
5. v. Herff, O. *Sophol for Ophthalmoblenorrhea Neonatorum.*
6. Harnack, E. *Phenol and Camphor as Prototypes of the Symptomatic Antipyretics.*
7. Straub, W. *Physiological Standardization of Drugs, especially Folia Digitalis.*
8. Dunger, R. *A Simple Method of Counting Eosinophilic Leucocytes and its Practical Value.*
9. Brückner, E. L. *Causal Relation of Syphilis to Idiocy.*
10. Riedel. *Course and Outcome of Strumitis Chronica.*
11. Werner, R. *Biological Effect of Radium Rays.*
12. Kuhn, F. *Resuscitation by Ventilating the Air Passages through the Natural Channels.*
13. Koch, W. *Dangerous Accidents from the Use of Menthol in Infancy.*
14. Durlacher. *Phlegmon of the Thigh in Childbed.*
15. Geuer, F. *The Cigarette Drain.*

2. Steinert reports important observations bearing on the etiology of endocarditis, and especially of the subacute forms. He disagrees with Schottmüller on several clinical points. In summarizing he says that endocarditis lenta (subacute endocarditis, Schottmüller) may be caused not only by strepto. viridans, but also, under certain circumstances, by non-hemolytic streptococci; that these organisms, including viridans, may cause acute septic infections; that the chronic septic endocarditis occurs only in rheumatic patients, most of whom have an old endocarditis; and that the subjects of acute endocarditis have no rheumatic history. The writer then raises the question whether in a person once attacked by rheumatism an allergy may arise toward streptococci. [G. C. S.]

Berliner Klinische Wochenschrift. No. 42.

Oct. 17, 1910.

1. His, W. *In Memory of Ernst von Leyden.*
2. *Von Noorden, C. *The New Preparation of Albumin "Riba."*
3. Michaelis, G. *The Theory of Opsonins, their Importance in Practice.*
4. Friedberger, E. *Further Communications concerning the Relation between Hypersensitiveness and Infection.*
5. Hoffmann, R. *Anaphylaxis and Internal Secretion.*
6. Schereschewsky, J. *Recognition of the Syphilitic Stimulants in the Course of Cultivation of the Spirochete Pallida.*

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7. BRUCK, C. *Further Examination Csoncerning the Nature of Drug Eruptions.*
8. LIEFMANN, H., AND STUTZER, M. *Brief Communication Concerning the Bacteriolytic Complement.*
9. POEPPELMANN, W. *Treatment of Tuberculosis by Means of Inoculation of the Skin with Tuberculin.*
10. DEYCKE, G., AND MUCH, H. *Concerning a Few Debatable Points in the Biology of the Tubercle Bacillus.*
11. MEYER, E. *A New Preparation of Iodide of Iron applied to Rhino-laryngology.*
12. ALEXANDER, A. *The X-Ray in Dermatology, its Indication and Technic.*
13. EWALD, C. A. *Supplement to my Contribution Concerning Sahli's "Pantopon," in No. 35 of this Journal.*

2. Von Noorden reports that a new preparation has been put on the market after years of experiment. This is made from fish. It is composed of the following ingredients: Albumin (very little) and hemi-albumose, 22.5%; primary albumose, 62.5%; deutero-albumose (B. and C.), 15%; pure peptone, quantity not ascertainable. Not only has the author found it of great value in the feeding of stomach cases by mouth, but also of very great value in nutrient enemata because of its freedom from irritating qualities and because it is so readily absorbed. [J. L. H.]

ARCHIV FÜR KLINISCHE CHIRURGIE.

VOL. 93. PART 1.

1. *ROTTER, J. *The Treatment of Diffuse Peritonitis.*
2. v. MUTACH, A. *Experimental Investigation into the Condition of Striated Muscle-tissue following Myoplastic Operations.*
3. NEUBER, G. *The Treatment of Tubercular Coxitis.*
4. v. SAAR, G. F. *Experimental and Clinical Investigations of Duraplasty.*
5. *ESCHENBACH. *Ileocecal Tuberculosis.*
6. HESSE, F. *Neisser-Pollack's Puncture of the Brain for Diagnostic and Therapeutic Purposes.*
7. GEBELE. *Persistency of the Thymus Gland in Basedow's Disease.*
8. POKOTILO, W. *The Fate of Living Bones which have been transplanted in the Soft Tissues.*
9. HOHMEIER, F., AND KÖNIG, F. *Résumé of Lumbar Anesthesia during the Year 1909.*
10. NOETZEL, W. *Experimental Research upon the Subject of Peritonitis following Perforation of the Gall Bladder.*
11. FRANGENHEIM, P. *Late Results of Osteoplastics in Animals.*
12. GULEKE, N. *Experimentation on Suture of the Aorta.*
13. ROSENBACH. *Experimental Investigations on the Effect of Trypsins on the Blood Vessels.*
14. Minor Communications:
    LOTSCH, F. *An Apparatus for Forced Pressure Narcosis.*
    RIESE, H. *Actinomycosis of the Abdominl Wall due to a Splinter of Wood.*

1. Rotter's article presents a number of statistics concerning the mortality of peritonitis, both from his own experience and from that of others, and endeavors to find the cause for a higher mortality in certain series of cases. He concludes that neither the conditions of intra-abdominal pressure nor the kinds of drainage used influence the results, but that the difference in mortality is due to a difference in the type of cases from which a certain clinic draws its statistics.

An interesting point in Rotter's paper is the good results which he reports following closure of the abdominal wound, without drainage, in operations upon the gall bladder, even when pus has been spilled about the neighborhood of the liver.

3. Neuber reviews briefly the views which have been held as to the proper treatment of tuberculosis of the hip, and says that opinion has swung again to favor operative treatment. He then gives his technic for excision of the head of the femur, claiming for cases treated in that way an excellent result. Briefly, his procedure is as follows: A skin incision is made from anterior inferior spine of ilium downwards and inwards. Sartorius and long head of rectus femoris are cut near their origin; iliacus and anterior crural nerve are retracted inwards, thus exposing the anterior aspect of the capsule. This is opened, the head of the femur cut off with a Gigli saw, and the stump rotated forwards so it may be trimmed into the rough semblance of a head. The acetabulum is then cleared out, the stump replaced and the wound thoroughly irrigated with 5% formalin soap. Then the joint cavity is filled with 5% iodoform emulsion, a wick of vioform gauze led to the opening in the capsule, which has been sutured, and the wound closed to the wick. The leg is put up in strong abduction, with pressure over the hip.

5. In his article on ileocecal tuberculosis Eschenbach states that, excepting only the peritoneum, the cecum is the most frequently attacked viscus in the abdominal cavity. His experience covered 27 cases, of which 15 were in patients less than twenty years old. In 8 of these cases, the process seemed certainly to be primary in the intestine, for neither before nor after operation were signs of disease found in the lungs. Of the main symptoms of intestinal tuberculosis, i. e., tumor, mucus and blood in the stools, and stenosis, tumor was the only constant sign. Three had stenosis; 9, diarrhea. No case without lung involvement had fever. The treatment of these cases by excision of the affected part, followed by end-to-side or side-to-side anastomosis, was followed by a mortality of about 30%, due mostly to diffuse peritonitis. Eschenbach attributes much of this to the custom of leading gauze wicks to the site of suture; he now attempts to reinforce all such weak spots with a peritoneal flap, and sew the abdomen up tight. [G. G. S.]

BULLETTINO DELLE SCIENZE MEDICHE.

MAY, 1910.

1. *RUATA, G. O. *The So-Called Ozonifacient Compounds.*
2. BELLEI, G. *Some Notes on the Importance of Industrial Hygiene.*

1. From a chemical study and analysis of various essential oils and "ozonized" commercial products, Ruata concludes that such preparations never really liberate ozone, and that therefore their supposed hygienic value as germicides and deodorants is purely illusory. [R. M. G.]

JUNE, 1910.

1. RUATA, G. O. *The Luminosity of Certain Glasses.*
2. LUSSANA, F. *Action of Alanin on the Heart.*
3. *PUNTONI, V. *The Biologic Diagnosis of Echinococcus Cysts.*

3. From an extensive comparative study of the blood of cattle and of human beings with echinococcus cysts, Puntoni concludes that it affords excellent means for confirming the diagnosis of hydatid disease. The alexin reaction of Bordet and Gengou he believes is the most reliable, though technically very difficult. Next in value are eosinophilia and the precipitin reaction, which in his hands gave 78.4% of positive results. Anaphylaxis he does not consider practically available at present for diagnostic purposes. He believes that the biologic diagnosis of echinococcus should not be based on any one of these procedures, but that they should all be used to elucidate cases clinically obscure. [R. M. G.]

JULY, 1910.

1. BOSELLINI, P. L. *Lymphodermia and Mycosis Fungoides.* (To be continued.)
2. DEVECCHI, B. *A Case of Bilateral Cysts of the Suprarenal Capsules.*

AUGUST, 1910.

1. BOSELLI, A. *On the Death of Marcellus Putti.*
2. *CANTELLI, O. *A Methodical Study of Certain Substances in the Urine, of the So-Called Oxyglycoproteid Group, and their Importance as Indication of Renal Lesion.*
3. *RUATA, M. *Ozone as a Gaseous Disinfectant.*
4. BOSELLINI, P. L. *Lymphodermia and Mycosis Fungoides.* (To be continued.)
5. AVONI, A. *The Disinfection of the Hands in Surgery.*
6. MODONESI, F. *Traumatic Psychoneurosis.*

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2. Cantelli reports four cases, from an examination of the urine in which he concludes that the presence of para-, hypo- and glyco-xanthin in the urine indicates renal lesions, even in cases in which albumin is constantly absent.

3. The writer reports her experimental researches on ozone as a bactericide of the following organisms: Eberth's bacillus, colon bacillus, staphylococcus, B. fluorescens, B. prodigiosus, B. proteus vulgaris, diphtheria bacillus, cholera vibrio, and concludes it to be of relatively little value. [R. M. G.]

## Miscellany.

### "PNEUMONIC PLAGUE" IN ENGLAND.

During the past three weeks the daily press has contained occasional rather startling accounts of a so-called "pneumonic plague," said to be prevalent in the county of Suffolk, England. The disease, which is stated, though evidently without obvious authority, to be identical with the Black Death of 1348, is described as a fulminating pneumonia, causing death in a few days. Four cases appeared in September in the village of Freston, four miles from Ipswich, and all died. Since then no more human infections have been reported, but it was observed that rats, cats and rabbits were dying in large numbers in the vicinity with similar symptoms. From the fear of further spread of the disease through their agency has resulted an extensive popular campaign of extermination against small animals. Professional ratcatchers are said to have flocked to the county from all parts of England and to be reaping rich rewards from householders and proprietors of landed estates for destruction of thousands of cats, hares, rats and small rodents. Notices have been posted warning all persons not to touch any dead animal or to use the flesh of rabbits for food. The county of Suffolk includes the Orwell Peninsula, between the rivers Orwell and Stour, which is a great shipping district. Its chief city and seaport, Ipswich, which contains forty acres of dockyards, abounding in rats, is believed to have been the point of entry of the infection, through rats on grain-vessels from Odessa. Whatever the truth of the case, which in the absence of official medical statement and bacteriologic verification must for the present remain *sub judice*, the exterminative zeal of the inhabitants will at least have the advantage of ridding Suffolk of many undesirable vermin.

## Correspondence.

### "SUCCESS IN ATHLETIC SPORTS."

Cambridge, Mass., Nov. 12, 1910.

*Mr. Editor:* An editorial in the Journal of Nov. 3 relating to physical training seems to me to be a most unusual combination of broad physiologic wisdom and of (certainly unintended) injustice to the leader of American physical education. The algebraic sum of the editorial we need not try to specify!

It surely is a satisfaction to every physiologist (however the Harvard Athletic Association trainers and "rooters" may feel about it) to have an editor of the influential Journal pronounce the male trained athlete "an artefact, a man unnaturally developed to make an abnormal physical exertion"; to have an editor emphasize that "discipline of temperament is worth more than specific physical training"; and to have him remind his Journal readers of the importance of the mental factor in training for general vital efficiency. Certainly it were hard to imagine a *worse* condition of athletics than one in which a small minority are over-trained and thereby weakened for life, while the great essential majority who need it most get no efficient exercise or none plus nervous excitement, which makes matters worse by far. When the athletic associations in some of the universities begin to realize this thing and employ scientists rather than lawyers and ticket agents to manage their affairs, the mass of the students for whom they (nominally) exist will reap a surpassing benefit. At present sometimes luxury and extravagance leave no inclination for any utilitarian benefit to the student-body, which serves none the less as the scapegoat year after year.

But the high tone of the wisdom in this latter part of the editorial in question makes all the more unfortunate in a way the injustice done Dr. Dudley Sargent in the statement that he ascribes the "usual superiority of women over men in swimming" to "their better conservation of heat, owing to their usual greater proportion of adipose in proportion to the body-weight and bulk." However conspicuous this fat-factor may be in the case of Rose Pitonoff (and the present writer can testify to its unusual nature), Dr. Sargent never dreamed, we may be sure, of suggesting it as a cause of her extraordinary swimming feat of last summer (twelve miles in water that in places was as cold as 49° F.) and without fatigue. Indeed, in his address last fall before the Academy he expressly thus summarized the "factors that made it possible for Miss Pitonoff to accomplish this remarkable athletic performance": "The quick metabolism of youth; less body surface for radiation in proportion to weight than most girls of her age; muscles covered with a layer of fat; favorable anatomic structure; slow returning circulation; peculiar stroke; prolonged practice in swimming; unemotional nature; good habits of living supplemented by high moral courage, steadfastness of purpose and a determination to accomplish the object in view. All these desirable qualities were greatly aided by favorable circumstances, good training and skillful piloting." Here explicitly are *thirteen* highly instructive reasons for her success, of which the "layer of fat" is but *one*. Thus it is that the good sense and learning of an expert has received unintentional depreciation at your hands. If anything, he has underestimated this fat factor rather than overestimated it, as any one experienced in such matters who had seen Miss Pitonoff would be apt indeed to think. At any rate, the first part of the editorial in question misrepresents the facts and I write "in the interests of fair play," however little Dr. Sargent's reputation for good judgment might suffer from such editorial mistakes.

With great respect,

George V. N. Dearborn, M.D.

*Post-scriptum.* Since the above was written and mailed a letter has been received from Charles B. Durborow, one of the contestants in last summer's swim to Boston Light. He is a clerk in the First National Bank of Philadelphia, but "during the present year has swum 490 miles, rowed 1,967, and canoed 837," while last summer he swam from Philadelphia to Chester, about 33 miles, in twelve hours and forty-four minutes. He writes: "I tried the Boston swim late in August; in fact, I was determined to go to the Light and back, but I was not prepared for that awful cold. . . . I swam to abreast of Deer Light in 3.38 when the cold forced me to stop. I was under weight and over trained and not prepared. . . . I feel sure I could not stand the cold long enough for a round trip."

The somewhat striking coincidence of this unexpected letter with the ideas expressed in the above letter is obvious. Surely there are more factors in athletic (as in vital) efficiency than the majority of trainers and of physiologists are apt to realize. Not only in water but on land, the body heat relations have much to teach us.

G. V. N. D.

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## RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, NOV. 5, 1910.

| CITIES. | Reported deaths in each. | Deaths under five years. | CITIES. | Reported deaths in each. | Deaths under five years. |
|---|---|---|---|---|---|
| New York | 1,173 | 324 | Waltham | 1 | 0 |
| Chicago | 572 | 168 | Pittsfield | 12 | 4 |
| Philadelphia | — | — | Brookline | 7 | — |
| St. Louis | — | — | Gloucester | 10 | 2 |
| Baltimore | — | — | North Adams | 6 | 1 |
| Cleveland | — | — | Northampton | 3 | 0 |
| Buffalo | — | — | Chicopee | 6 | 4 |
| Pittsburg | — | — | Medford | 5 | 1 |
| Cincinnati | — | — | Beverly | 1 | — |
| Milwaukee | — | — | Leominster | 1 | 1 |
| Washington | — | — | Hyde Park | 9 | 1 |
| Providence | — | — | Melrose | — | — |
| Boston | 198 | 43 | Newburyport | 5 | 1 |
| Worcester | 44 | 5 | Revere | — | — |
| Fall River | 32 | 10 | Westfield | 2 | 1 |
| Cambridge | 33 | 10 | Woburn | 4 | 2 |
| Lowell | 43 | 15 | Peabody | — | — |
| New Bedford | 22 | 10 | Marlboro | 3 | 0 |
| Lynn | 26 | 2 | Attleboro | 2 | 1 |
| Springfield | 21 | 7 | Adams | 6 | 4 |
| Lawrence | 20 | 9 | Clinton | — | — |
| Somerville | 19 | 5 | Gardner | 4 | 1 |
| Brockton | 11 | 1 | Milford | 1 | 0 |
| Holyoke | 14 | 5 | Watertown | 1 | 0 |
| Malden | 8 | 1 | Plymouth | — | — |
| Chelsea | 14 | 0 | Southbridge | 2 | 1 |
| Newton | 8 | 2 | Weymouth | — | — |
| Salem | 5 | 1 | Framingham | 5 | 1 |
| Haverhill | 15 | 4 | Wakefield | — | — |
| Fitchburg | — | — | Webster | 4 | 3 |
| Everett | 7 | 1 | Arlington | — | — |
| Quincy | — | — | Greenfield | 2 | 1 |
| Taunton | 9 | 1 | | | |

## LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND OTHER OFFICERS OF THE PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDED NOV. 2, 1910.

GLENNAN, A. H., assistant surgeon-general. Granted thirty days' leave of absence from Oct. 1, 1910, on account of sickness.

PETTUS, W. J., assistant surgeon-general. Leave of absence granted for one month and fifteen days from Aug. 29, 1910, amended to read one month and five days from Aug. 29, 1910.

WHITE, J. H., surgeon. Detailed to represent the Service at the next meeting of the Southern Medical Association, to be held in Nashville, Tenn., Nov. 8–10, 1910. Oct. 27, 1910.

YOUNG, G. B., surgeon. Bureau order of Oct. 9, 1910, relative to detail to represent Service at the annual meeting of military surgeons, revoked. Oct. 27, 1910.

LAVINDER, C. H., passed assistant surgeon. Detailed to represent the Service at the annual meeting of the Ohio Valley Medical Association, to be held in Evansville, Ind., Nov. 9–10, 1910. Oct. 27, 1910.

MCLAUGHLIN, A. J., passed assistant surgeon. Detailed to attend the annual meeting of the Association of Military Surgeons, to be held in Richmond, Va., Nov. 1–4, 1910. Oct. 28, 1910.

RUCKER, W. C., passed assistant surgeon. Detailed to attend the annual meeting of the Association of Military Surgeons, to be held in Richmond, Va., Nov. 1–4, 1910. Oct. 28, 1910.

CREEL, R. H., passed assistant surgeon. Relieved from duty on United States Revenue Cutter "Tahoma," and directed to proceed to Chicago, Ill., and report to the medical officer in command for duty. Oct. 25, 1910.

TURNIPSEED, D. C., assistant surgeon. Relieved from duty on United States Revenue Cutter "Perry," and directed to proceed to San Francisco, Cal., and report to Passed Assistant Surgeon M. W. Glover for duty. Oct. 25, 1910.

BELL, CHARLES, acting assistant surgeon. Granted thirty days' leave of absence from Nov. 26, 1910.

CLEBORNE, A. B., acting assistant surgeon. Granted seven days' leave of absence from Oct. 25, 1910, under paragraph 210, Service Regulations.

HOUGHTON, M. W., acting assistant surgeon. Granted five days' leave of absence from Oct. 31, 1910.

NAULTY, C. W., JR., acting assistant surgeon. Granted one day's leave of absence, Nov. 1, 1910.

SAFFORD, M. V., acting assistant surgeon. Granted three days' leave of absence from Oct. 26, 1910, under paragraph 210, Service Regulations.

STEVENSON, J. W., acting assistant surgeon. Granted two months' leave of absence without pay from Nov. 1, 1910.

THURSTON, E. J., pharmacist. Granted three days' leave of absence from Oct. 24, 1910, under paragraph 210, Service Regulations.

WOLFE, J. A., pharmacist. Granted one day's leave of absence, Oct. 22, 1910, under paragraph 210, Service Regulations.

### BOARDS CONVENED.

Board of medical officers convened to meet at the call of the chairman at Port Townsend, Wash., for the purpose of conducting a physical examination of an officer of the Revenue Cutter Service. Detail for the board: Surgeon J. B. Stoner, chairman; Surgeon J. H. Oakley, recorder. Oct. 26, 1910.

Board of medical officers convened to meet at the Quarantine Office, Honolulu, Hawaii, Nov. 21, 1910, for the purpose of conducting a physical examination of an officer of the Revenue Cutter Service. Detail for the board: Passed Assistant Surgeon Carl Ramus, chairman; Assistant Surgeon E. R. Marshall, recorder. Oct. 27, 1910.

Board of medical officers convened to meet at the Marine Hospital, Baltimore, Md., Nov. 21, 1910, for the purpose of conducting a physical examination of an officer of the Revenue Cutter Service. Detail for the board: Surgeon W. P. McIntosh, chairman; Passed Assistant Surgeon Dunlop Moore, recorder. Oct. 27, 1910.

## RECENT DEATHS.

HENRY WURTZ, A.B., Ph.D., who died last week in Brooklyn, N. Y., was at one time professor of chemistry in the National Medical College in Washington. He was born at Easton, Pa., on June 5, 1828, graduated from Princeton College, and later received an honorary doctorate in philosophy from the Stevens Institute of Technology at Hoboken, N. J. He served for a time as chemical examiner in the United States Patent Office, and was author of numerous chemical writings. He discovered and described *huntilite*, "a silver arsenide occurring with metallic silver at Silver Islet in Lake Superior, Michigan," and for him was named the mineral *wurtzilite*, "a solid bitumen found in the Vintah Mountains, Utah. He is survived by a daughter and four sons.

DR. FRANK NEWELL LEWIS, a well-known ophthalmologist of New York, died on Nov. 13, after a brief illness. He was born in Burlington, Vt., in 1857, of Welsh parentage, his father being Dr. James Lewis. He was graduated from the academic department of the University of Vermont in 1875, and from the medical department of the University in 1882. After additional study in Europe he served as interne at the Mary Fletcher Hospital in Burlington, and then began practice in New York. He later became professor of diseases of the eye at the New York Post-Graduate Medical School and afterwards executive surgeon at the Manhattan Eye, Ear and Throat Hospital. For a number of years he was associated with the late Dr. D. B. St. John Roosa.

## BOOKS AND PAMPHLETS RECEIVED.

From Biometrika. A Journal for the Statistical Study of Biological Problems. Vol. VII, No. 3, April, 1910. A Statistical Study in Cancer Death-Rates. By G. D. Maynard, Cambridge, England.

Massage in Sprains, Bruises and Dislocations. By Douglas Graham, M.D. Reprint.

Asiatic Cholera, Its Prevention and Treatment. By Charles S. Braddock, Ph.G., M.D. Reprint.

Causes of Tuberculosis. By W. H. Hutt, M.D. Reprint.

Treasury Department, Hygienic Laboratory. Bulletin No. 62. The Taxonomic Value of the Microscopic Structure of the Stigmal Plates in the Tick Genus Dermacentor. By Ch. Wardell Stiles. 1910.

Elasto-Massage. By Dr. Adolf Schnee. Berlin. Reprint.

Notes on Hospital Planning. By S. S. Goldwater.

Year Book of the Medical Association of the Greater City of New York, January, 1910.

Cases Illustrating the Origin of Hysterical and Pseudo-Hysterical Symptoms. By Tom A. Williams. Reprint.

Transactions of the American Otological Society, Forty-Third Annual Meeting, Washington, D. C., May 3 and 4, 1910.

Thérapeutique Usuelle du Praticien. By Albert Robin. Paris, 1910.

Transactions of the Thirty-Second Annual Meeting of the American Laryngological Association, Washington, D. C., May 3, 4 and 5, 1910.

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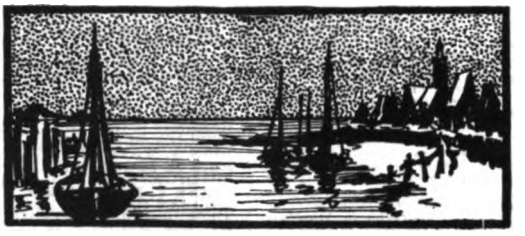

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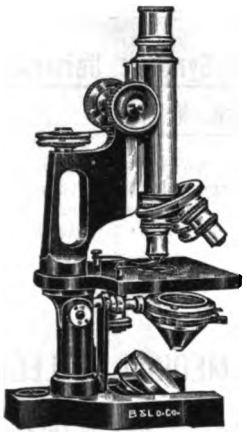

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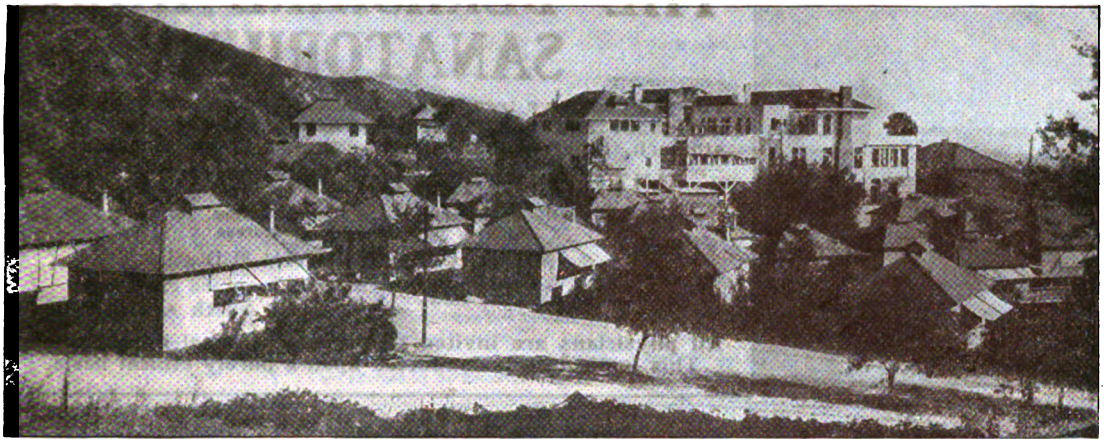

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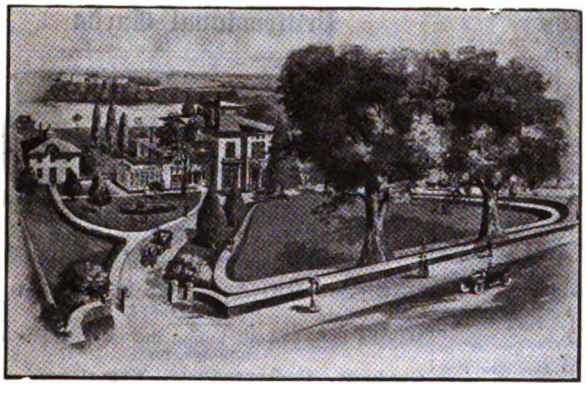

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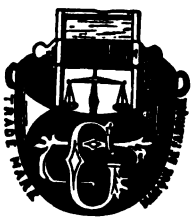

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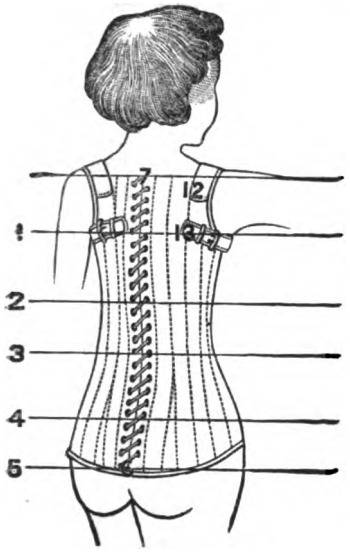


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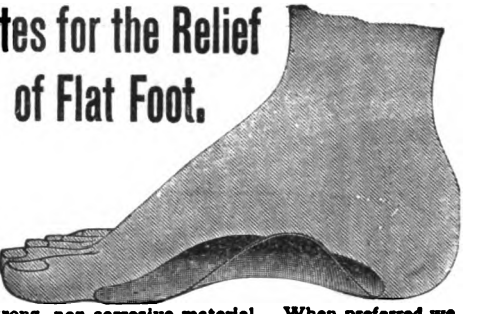

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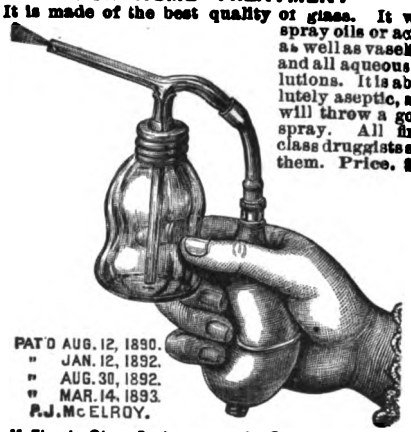


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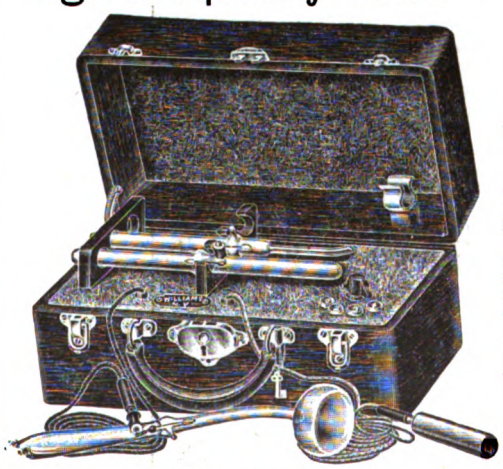

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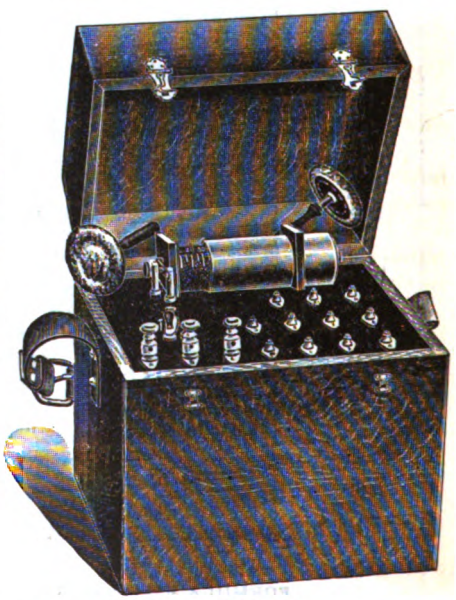

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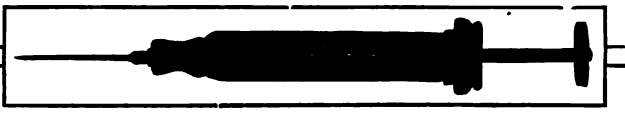

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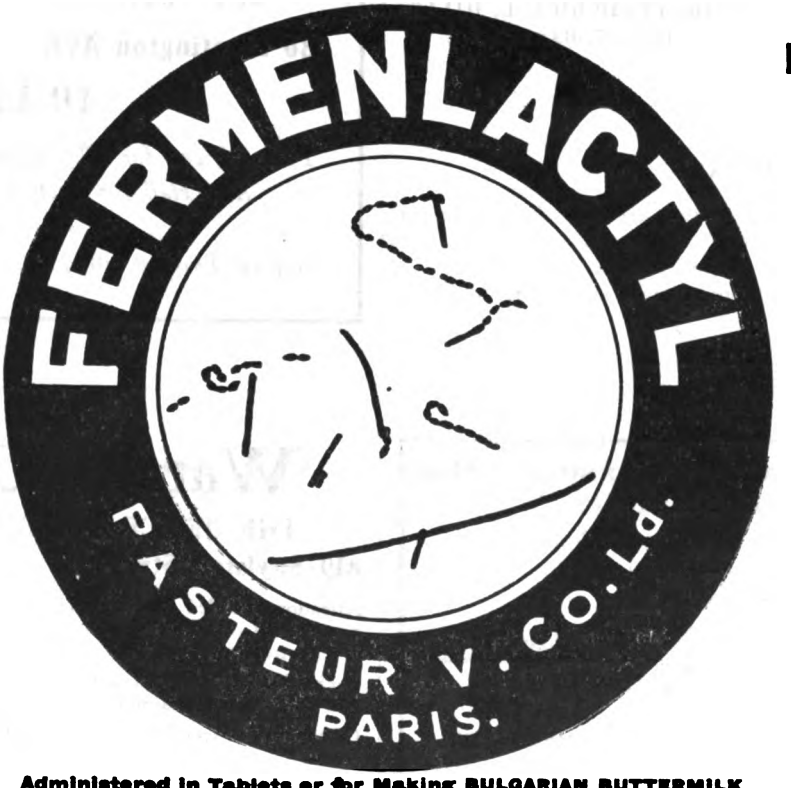


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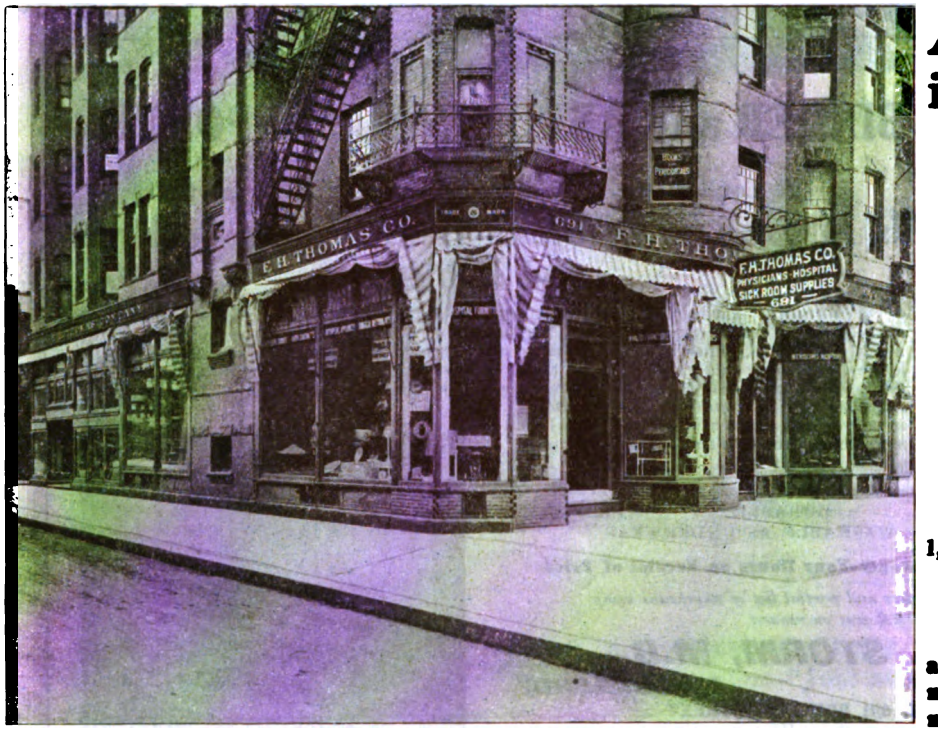


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## Original Articles.

# REMARKS ON THE TECHNIC OF OPERATIONS FOR STONE IN THE URETER.*

BY HUGH CABOT, M.D., BOSTON,

*Surgeon in Charge, Genito-Urinary Out-Patient Department, Massachusetts General Hospital.*

It is not my intention to burden you with a general discussion of the technic of operations for stone in the ureter, but as the position of the operation in surgery has changed rapidly within the last few years on account of the great accuracy of diagnosis, there are certain points of technic to which I wish to invite your attention.

### INCISIONS FOR THE EXPOSURE OF THE URETER.

With recent advances in the technic of ureteral catheterization and radiography, it is possible in the vast majority of cases to know beforehand in what portion of the ureter a stone is situated and plan the operation to reach this portion of the ureter, rather than to expose a large portion of the ureter for exploratory purposes. A great majority of stones lodge at one of three points.

1. The physiological constriction just below the pelvis of the kidney, about on a level of the lower pole of the kidney.
2. At the brim of the true pelvis where the ureter crosses the iliac vessels.
3. In the lower two inches of the ureter, near its point of entrance into the bladder wall.

The ureter in the first situation is, I believe, best reached by an oblique muscle-splitting incision, starting at about the tip of the twelfth rib and running downward and forward to a point about midway between the anterior superior spine of the ilium and the umbilicus. The fibers of the external oblique are separated in line of the incision, those of the internal oblique and transversalis practically at right angles to the incision. If the separation of the muscles is freely made, good access is obtained to the upper half of the ureter. After the muscles have been separated, the peritoneum is pushed back and the ureter readily found lying upon the psoas muscle, though its tendency to be turned up with the peritoneum should not be forgotten.

Stones situated at the brim of the pelvis may be conveniently reached by an incision in the same line as the one above described, but beginning where the other stopped at a point nearly midway between the anterior superior spine of the ilium and umbilicus and continued downward to the junction of the inner and middle thirds of Poupart's ligament. Here again the peritoneum may be pushed back and the ureter readily found at the point where it crosses the bifurcation of the common iliac artery.

For stones in the lowest portion of the ureter, the incision advised by Gibson is particularly suitable. This incision starts in the middle line about a finger's breadth above the pubes, running horizontally outward nearly parallel to Poupart's ligament at first and curving rather sharply upward at its mid-point to end about opposite to the anterior superior spine of the ilium. The aponeurosis of the external oblique and internal oblique is divided in the line of the incision, and at the outer portion of the incision a few fibers of the internal oblique may have to be cut across. The upper flap is then retracted, the external border of the rectus muscle identified and the fascia of the transveralis divided by a vertical incision, close to and parallel to the rectus, that is, at right angles to the original incision. The peritoneum is then stripped back, and with good retraction, and the patient in the Trendelenburg position, an excellent exposure of the base of the bladder and lower portion of the ureter is obtained.

The incision seems to me much superior to the curved incision commonly used, and in practice I have found the exposure all that could be asked for.

### REMOVAL OF THE CALCULUS.

Most writers upon this question, and notably Albarran and Jeanbrau, whose recent contributions are of the greatest value, advise incising the ureter upon the stone. The point to be gained is, of course, the removal of the calculus with the least damage to the ureter and to leave the tissues in such a condition that subsequent suture of the ureter may be done without danger of leakage. They point out that the attempt to draw the stone up the ureter is likely to subject it to trauma, which will lower its resistance and result in sloughing, with the possible production of stricture. Their reasoning on this point does not seem to me sound. The point at which the stone is arrested is usually a physiological narrowing; the presence of the stone has generally resulted in inflammation, frequently in ulceration of the ureter. The ureter below the stone is of normal, or less than normal, caliber, while above the stone it is practically always dilated. I believe that incision on the stone in the ulcerated tissue is almost certain to result in some sloughing of the tissue, and that the already existing tendency to stricture is increased by the fact that suture further narrows the ureter and that the sutures are likely to cut through with further sloughing. In a word, I believe that this technic in difficult cases, particularly with an infected kidney, is likely to cause rather than prevent leakage and stricture of the ureter. As has already been noted, the ureter above the stone is generally dilated. It is safer to incise the ureter one or two inches above the stone, then with suitable forceps passed into this opening withdraw the stone and extract it through the incision. In my experience this has not resulted in notable trauma of the ureter, and though in two of the cases, the reports of which are subjoined, the stone was considerably impacted, no difficulty was experienced in dislodging it. The chief advantage of this method seems to me to lie in the greater security from subsequent leakage or stricture, whether or not sutures are employed. The dilatation of the ureter makes the application of the suture not only easier, but free from danger of narrowing the ureter. It is frequently possible

* Read at the meeting of the American Urological Association, June 6 and 7, 1910, at St. Louis, Mo.

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to apply two layers of sutures without reducing the ureter even to its normal caliber.

THE PERMEABILITY OF THE URETER.

The failure to ascertain the permeability of the ureter at this time, and its freedom from other calculi, or from strictures, has been a potent source of unsatisfactory results. As Albarran has wisely pointed out, freedom of the ureter from obstruction is essential to success. This permeability may be ascertained by the use of bougies, or, better, by a small bougie-à-boule, which should be passed downward to the bladder and upward to the kidney. If stricture of the ureter is found, it must be relieved before the operation is finished, either by the internal ureterotomy of Albarran, or by some other method.

TREATMENT OF THE URETER AFTER EXTRACTION OF THE CALCULUS.

Until recent times, the only question here at issue was that of suture of the incision. Recently, however, Albarran and others of the French school have advocated the placing of an inlying catheter which would drain the kidney pelvis direct, and thus, in their opinion, favor wound healing. Albarran advises, though does not insist upon, its use in aseptic cases, but strongly urges its use in septic cases. Jeanbrau, in a recent monograph, advises its use only in septic cases. I believe the method to be largely without merit for the following reasons: The catheters which can be used without doing damage to the vesical orifice of the ureter are necessarily small, not larger than a 12 or 13 F. It is to be remembered that the ureter is almost habitually dilated, sometimes to considerable size. It is almost inconceivable that a catheter of this caliber, especially in septic cases, could drain the kidney pelvis so satisfactorily as to prevent the collection of pus and urine in the ureter outside of the catheter. More especially is this likely to occur where there is active suppuration and pus formation in the kidney. Our experience with inlying catheters in the urethra does not encourage the belief that their presence is not objectionable, as they undoubtedly favor infection. Should the catheter fail to drain completely, and the urine enter the ureter along the side of the catheter, great pressure will be brought to bear upon the incision in the ureter, which is likely to leak if no sutures have been used, and certain to produce strain upon the suture and sloughing if they have been employed. A catheter of this caliber fits very snugly in the vesical orifice of the ureter and considerable pressure must be exerted before the urine can be forced by the catheter. Should the catheter fail to drain, and leakage occur, all advantage of the catheter is lost and increased sloughing about the incision in the ureter is likely to result. Stress has been laid upon the value of the inlying ureteral catheter in cases of stricture of the ureter below the calculus. If its use is confined to these cases it may be of advantage, but our experience with stricture of the urethra does not encourage the belief that permanent results will be thus obtained.

DRAINAGE OF THE ABDOMINAL WOUND.

It has been the almost universal custom to put some drainage in the abdominal wound down to the point of suture in the ureter. It has been regarded as a form of insurance which could do little harm and might save troublesome complications should leakage occur. With this view one cannot but sympathize; on the other hand, it is not inconceivable that the use of drainage even in this way may favor leakage, as it undoubtedly does in cases of suture of the intestine, though it is admitted that the cases are not parallel.

In three recent cases, two of which were aseptic and one markedly infected, no drainage of any kind has been used and the wound has been closed in layers including the skin. While I am not prepared to advise this as a routine procedure, I would ask for it your consideration.

The following cases are submitted as tending to support my contention.

Mrs. A. K., thirty-four. First seen Jan. 9, 1909. Eight years ago had an attack of what was apparently renal colic in the left side, followed by the passage of a stone. No further trouble until six months ago when she had another attack of left-sided pain with nausea and vomiting. Pain, never very severe, lasted for a few days and disappeared. Two months ago another attack of similar character. Since that time has had more or less left-sided pain coming in attacks, but not enough to lay her up. Moderate frequency of micturition, amounting to twice at night. No known hematuria.

Examination negative except as below described. There was slight general abdominal tenderness, most marked on the left side along the course of the ureter and in the left costo-vertebral angle. By vagina there was marked tenderness to the left of the cervix, and it was thought that a mass could be felt in the region of the ureter. X-ray showed a stone in the left ureter about two inches above the bladder. Urine was normal, acid, 1,022, albumen slightest possible trace. Moderate sediment, consisting of pus and a few red blood corpuscles. At the time of entrance there was almost constant vomiting and considerable pain in the left groin. Operation was done about six hours after admission. An attempt was made to reach the stone through a vaginal incision, but it was so movable in the ureter that it could not be reached by this route. A six-inch incision was, therefore, made from the anterior superior spine on the left downward and inward parallel to Poupart's ligament, muscles separated and divided and ureter exposed near the brim of the pelvis. It was found dilated to the size of the finger and much thickened. Following it downward the stone could be felt. It was readily dislodged and pushed up the ureter to a point near the brim where the ureter was incised and the stone removed. The incision in the ureter was then closed with interrupted catgut sutures. A small cigarette drain placed to the point of suture. Wound closed about it in layers. Wound healed kindly without leakage. At the time of discharge from the hospital urine was normal, acid, 1,031. No albumen or sediment.

Feb. 1, 1910. The scar is firm, has had no symptoms from kidney or ureter, and urine is normal.

Mr. M. M. D., twenty-four. Entered hospital Feb. 16, 1910. Six years ago had an attack of painless hematuria lasting two days. Two years ago another attack of hematuria, also painless, but followed by the passage of three small calculi. Two months ago colicky pain in the right lower quadrant of the abdomen.

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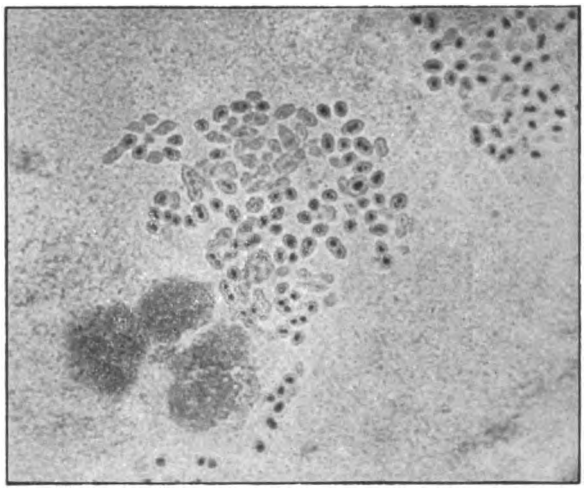

FIG. 1. Pneumococci. Pericardial exudate. 1500

FIG. 2. Pneumococci smear from lung exudate, pneumonia. 2800.

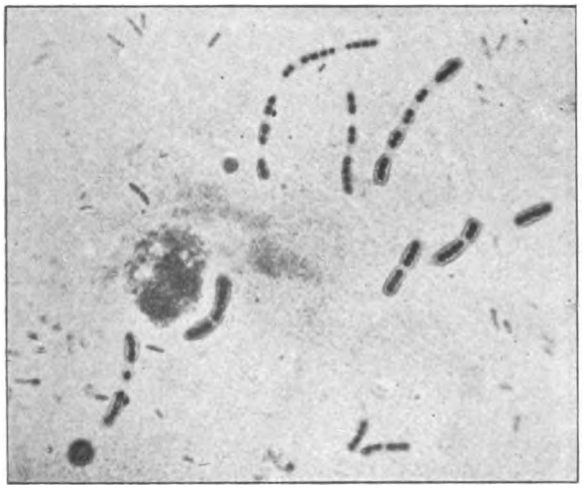

FIG. 3. Streptococcus mucosus capsulatus (pseudo-pneumococcus), sputum, bronchitis. 1500.

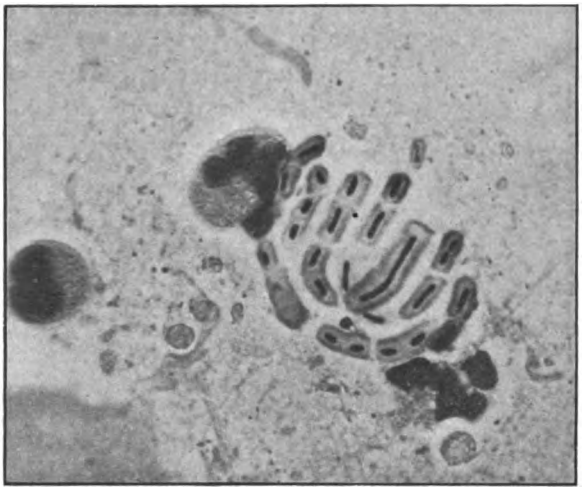

FIG. 4. Bacillus mucosus capsulatus, sputum, bronchitis. 1500.

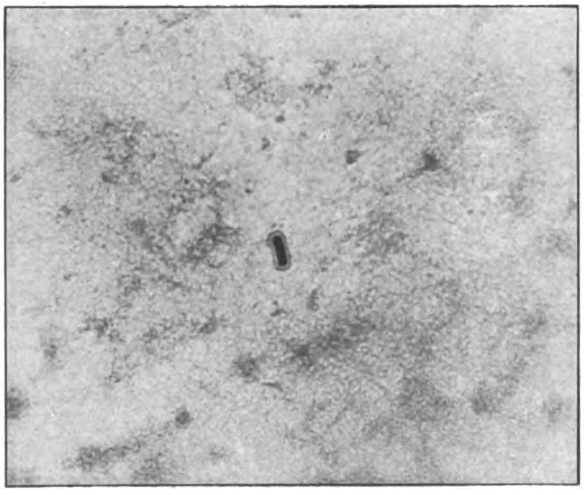

FIG. 5. Bacillus aerogenes capsulatus. Smear from spleen. Septicemia. 1500.

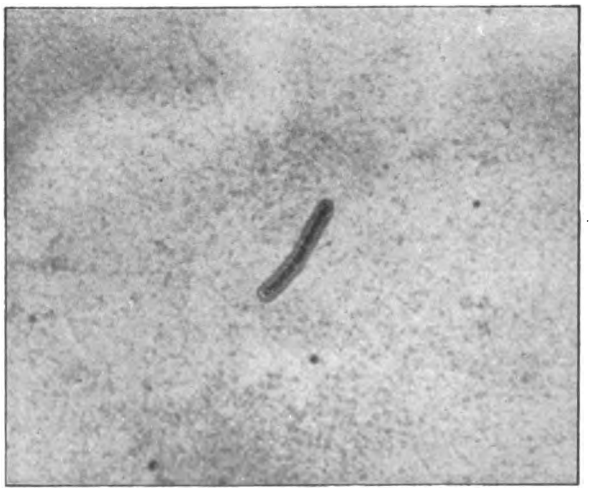

FIG. 6. Bacillus of anthrax. Smear from pustule. 1800.

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Pain shooting to the right testis and penis. Since that time has had several such attacks, but no marked hematuria, though the urine has been smoky. Two weeks ago was laid up in bed for several days with a dull pain in the region of the cecum and was thought to have appendicitis.

Examination showed tenderness with some muscular spasm in the right lower quadrant of the abdomen, but was otherwise negative.

Cystoscopy showed a normal bladder with the orifice of the right ureter slightly larger than the left, but not otherwise abnormal. Normal urine from the left side, none from the right. Ureter catheter entered right ureter for 9½ cm., but could be passed no further. Several x-ray plates were negative. At operation the ureter was exposed at the brim of the pelvis by an oblique incision starting about two inches inside of the anterior superior spine and running downward and inward for about five inches. The peritoneum was pushed back, the ureter located and the stone felt just below the iliac vessels. A Crile clamp was placed upon the ureter to prevent urinary leakage, and the ureter incised at a point just above where it crossed the vessels and about 1½ inches above the stone. A pair of narrow-bladed forceps was then passed into the ureter, the stone grasped and readily removed. The wound in the ureter was closed with a single layer of interrupted 0 catgut sutures. The abdominal wound was closed in layers without drainage.

Patient last seen in May, 1910, when he was in good condition and had a normal urine.

Mr. C. C. B., forty-two. Entered hospital Feb. 25, 1910. Seven years ago had an attack of pain in the right loin and side. Hematuria for several days, followed by the passage of several small stones. Well until ten days ago, when he began to have pain in the right side similar to but not so severe as the previous attack. This was accompanied by moderate frequency of micturition, amounting to three to five times at night. No hematuria. Pain lasted two days and then disappeared, but the frequency of urination continued and the urine contained pus. It was for this he applied for treatment.

General physical examination negative. Series of good x-ray pictures was negative. The urine was pale, cloudy, alkaline, 1,013, albumen slightest possible trace, sediment, mostly pus with rare red blood corpuscles.

Cystoscopy showed bladder generally normal. Right ureteral orifice slightly thickened and slightly ulcerated. Ureter catheter enters the right ureter for 7 cm. A smaller catheter was then tried and passed 10 cm., but would go on further. Catheter passes up the left ureter freely and draws normal urine. Indigo-carmine excreted in nine minutes by left kidney, not at all by the right in an hour.

The position of the stone in this case was then demonstrated by taking an x-ray picture with the tube placed in an oblique position as described in a paper by Cabot and Dodd (Boston Medical and Surgical Journal). This patient was operated upon by the same method as that employed in the last case. The stone was much larger, and was found tightly impacted in the ureter at the point where it crosses the iliac vessels. There was moderate dilatation of the ureter above the stone. The ureter was occluded with a Crile clamp and opened about two inches above the stone. This was then grasped with forceps, dislodged without difficulty and removed. The wound in the ureter was closed with two layers of interrupted 0 catgut sutures. In spite of the infected condition of the kidney, the closure of the wound in the ureter seemed so secure that no drainage was used. The abdominal wound was closed in layers without drainage. Convalescence was entirely uneventful.

Patient was seen in May, 1910, and is now free from symptoms, though the urine is still slightly cloudy with pus, and it is not improbable that the damage to the kidney has been so great that its ultimate removal may be wise.

Mr. F. C. N., thirty-four.

Previous history unimportant except for a severe crushing accident involving the left hip four years ago. From this he recovered with a good deal of stiffness and some shortening of the leg. Three years ago passed a stone from his bladder which troubled him only in its passage through the urethra. There was no renal colic and no hematuria. Six months ago had an attack of renal colic with hematuria, no stone passed.

April 12, 1910. A severe attack of renal colic with hematuria. It was so severe that he was taken to the Emergency Hospital, where he remained over night. Since that time has had some grumbling pain in the left lower quadrant of the abdomen. No pain on urination.

Physical examination is totally negative. Urine shows slightest possible trace of albumen, moderate sediment, pus, round cells, moderate number of red blood corpuscles.

April 20. Cystoscopy shows a normal bladder and normal ureteral orifices. Ureter catheter enters 2 cm. in the left but will go no further. X-ray plates by Dr. Dodd negative for kidney region. On the left side about 1½ inches from the symphysis pubis is a definite shadow, probably in the left ureter. Operation advised.

April 25, operation. Anesthol and ether.

Curved incision from about one inch to the right of the symphysis pubis, about one inch above Poupart's ligament, following that line upward and outward to the region of the anterior superior spine on the left. External oblique fascia separated, fibers of the internal oblique divided. The fascia was then divided vertically at the outer border of the right rectus, thus forming a triangular flap (Gibson's incision). Peritoneum freed from iliac fossa and ureter exposed from the iliac vessels downward with some difficulty. Peritoneum torn just in front of the ureter. Ureter freed, held up by a loop of catgut, Crile clamp placed near the brim and the ureter opened about two inches above the bladder, where it was dilated to the size of a lead pencil. Probe passed into the opening could feel the stone about 1½ inches below. Stone picked up with some difficulty by means of a small straight clamp and extracted. Bougie passed to bladder without obstruction. Wound in ureter closed with two layers of 0 catgut. Abdominal wound closed in layers without drainage.

June, 1910. Patient has made an uneventful recovery.

## A METHOD OF STAINING CAPSULATED BACTERIA IN BODY FLUIDS.

BY WILLIAM H. SMITH, M.D.

(*From the Pathological Laboratory of the Massachusetts General Hospital.*)

The following method of staining capsulated bacteria in body fluids is published in order that its real value may be determined. It has been found, during the past two years, in my hands, to bring more uniform results than any other method with which I am familiar.

In looking over some preparations of pneumonic exudate due to the Bacillus mucosus capsulatus, stained by Mallory's connective tissue stain, the well-marked staining of the capsule about the bacilli in the exudate was noted. Pre-

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vious experience in staining the capsule about these micro-organisms in the exudate in other preparations, and its difficulty, led me to investigate why in this particular preparation, stained with Mallory's stain, the capsule should be so much clearer than in any of my other specimens.

The capsules about the micro-organisms were stained blue in the preparation above referred to, so specimens of sputum, lung exudate, pleural and pericardial effusions were stained with Grübler's aniline blue in varying strength, but the capsules about the pneumococcus or streptococcus mucosus capsulatus present in the preparation did not stain. The same smears when stained by the aniline blue, orange G. phosphomolybdic acid combination did show capsules. It was then considered that the phosphomolybdic acid might be a factor, and, after repeated trials with phosphomolybdic acid of different strength, more uniform results were obtained. As a result of this investigation, the following method is recommended for staining capsulated bacteria in body fluids.

1. Make a thin smear from fresh sputum, lung, pleural or pericardial exudate.
2. Pass through flame.
3. Cover with 10% (ten per cent) aqueous solution of phosphomolybdic acid (Merck) four to five seconds.
4. Wash in water.

If the micro-organism is Gram-staining like the pneumococcus or streptococcus mucosus capsulatus, stain with,

5. Aniline oil gential violet, steaming one-quarter to one-half minute.
6. Wash in water.
7. Treat with Gram's solution of iodine, steam one-quarter to one-half minute.
8. Decolorize with 95% alcohol.
9. Wash in water.
10. Stain with 6% (six per cent) aqueous solution of eosin (Grübler's w. g.) one-half to one minute, warming gently.
11. Wash in water.
12. Wash in absolute alcohol.
13. Clear in xylol and mount in Canada balsam. The capsule will be found to be distinct, clear cut, eosin stained, about the Gram-stained micro-organism.

If the micro-organism is Gram-decolorizing, after covering the smear with phosphomolybdic acid and washing,

1. Stain with 6% (six per cent) aqueous solution of eosin one-half to one minute, warming gently.
2. Wash in water.
3. Counter stain with Loeffler's methylene blue one-quarter to one-half minute, warming gently.
4. Wash in absolute alcohol.
5. Clear in xylol and mount in Canada balsam. The capsule will appear eosin stained about the blue-stained micro-organism.

I am indebted to Dr. James Homer Wright for his frequent advice during the progress of the work, and to Mr. L. S. Brown for the photomicrographs which accompany the article.

## CANCER OF THE SCROTUM.

BY ROBERT M. GREEN, M.D., BOSTON.

(Concluded from No. 20, p. 759.)

OGSTON, in an article on the "Local Effects of Crude Paraffin," in the *Edinburgh Medical Journal*, 1871, xvii, 544, says:

"The workmen engaged in this manufacture [of paraffin] have the skin over portions of their bodies, more especially of the hands and arms, but also of the feet and legs, brought daily for many hours at a time into contact with the paraffin shale, and with the oily matters mixed up with it, the result being an eruption of nodules and pimples on the skin so exposed, speedily breaking out on those who are for the first time engaged in it, lasting for a few weeks or months, and then generally diminishing or disappearing. In a few exceptional individuals the eruption does not disappear, but, assuming a chronic character, produces so marked and prolonged an affection of the skin that the general health becomes impaired and the cessation of this employment becomes a necessity. The appearances differ in the two classes of cases, acute and chronic, and, while the essential alterations in the skin remain the same, the presence of inflammatory action in the acute, and its absence in the chronic, forms leads to a marked distinction between the two, and admits of their being separately described.

"In the *acute* form of the eruption, which soon appears in those exposed to the influences of crude paraffin, the skin of the hands, wrists, arms, feet and legs becomes covered with a rash of bright red nodules, closely approximate to each other, and usually largest and most numerous on the wrists or wherever the dress tightly embraces the skin, the dorsal aspects of the parts being most severely affected, and the palms of the hands and soles of the feet enjoying a complete immunity. Similar nodules arise, though to a less extent, on the face, neck and other parts of the body to which the oily matters find access.

"On examining minutely the skin of those affected in this way, the following are the leading peculiarities of the eruption: The bright red nodules, hard to the touch, tender on pressure, varying little in size, which is about equal to that of a grain of barley, are of a rounded form and consist each of a single hair-follicle with the parts immediately surrounding it, which are inflamed, indurated and reddened. The hair emerges from the very summit of the nodule, and the orifice of the hair-follicle is much enlarged and easily visible to the naked eye as an aperture of a magnitude similar to that of a pinhole in a card. The dilatation extends to the deeper part of the follicle, which forms the kernel of the inflamed knot, the retention of its contents evidently contributing to the inflammatory induration around. The gaping mouth of the follicle exhibits masses of cast-off epithelial scales, dry and friable instead of greasy and tenacious; the nodule has little of the tendency to run on to suppuration observable in an ordinary *comedo*, and its contents cannot be

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squeezed out. On the contrary, the redness and induration, after remaining for some little time, gradually diminish and finally disappear, leaving the hair-follicle enlarged and its mouth gaping so as to exhibit the retained epithelial masses, these latter being rendered more distinct by continued retention and accumulation of dirt. In fact, the *acute* form of the eruption consists of successive crops of these nodules, which are thus at the same time seen in all stages of their growth, full development and subsidence, while the skin between them, studded with the black gaping mouths of such follicles as have already passed through or are about to undergo the process, retains, contrary to what is observed in the chronic form of the malady, its natural pliancy and elasticity.

"In all paraffin-workers, patency and enlargement of the hair-follicles continue to some extent so long as they are engaged in this manufacture, and the black dots in the skin of their hands and face strike the eye of the observer at once, men with dark complexions and strong hair being especially deformed in this way, while fair complexions and light or reddish hair escape comparatively unaffected.

"A few exceptional individuals, with swarthy complexions and hairy skins, suffer so much from an exaggerated patency of the follicles that they are compelled to quit their occupation and seek a more suitable calling. When the disease assumes this *chronic* form it exhibits the following characteristics: The backs of the feet and toes, the dorsum of the hand and the backs of the fingers between but not over the joints exhibit a peculiar honeycombed appearance of the skin, which is elevated, thickened and inelastic, so as to prevent or render difficult and painful the flexion of the fingers and hand. These elevated honeycombed patches are of natural color and not inflamed (except where an isolated papule exhibits the appearance described under the acute form), but consist of densely-grouped arrays of hair-follicles, with the indurated cutis between and around them, the follicles packed with dry, brittle accumulations of epithelial scales so extensive as to be easily visible through the dilated mouths of the follicles, these latter being large enough to admit the extremity of an ordinary probe. The hairs themselves have disappeared from these patches, having probably become atrophic from the pressure of the epidermic masses, while cracks and bleeding fissures traverse the indurated parts, and in rare instances a follicular abscess gives variety to the picture. The knuckles of the fingers and toes, the palms of the hands and the soles of the feet remain unaffected by the disease. In the subject of the chronic malady the complexion is pale and the tongue foul, while the loss of flesh betrays the effects of the sleepless nights caused by the constant irritation and pain of the skin of the affected extremities.

"The *modus operandi* of the crude paraffin in producing these results seems to be as follows: The only matters in the shale, called 'blue oil,' when separated, are both penetrating in their properties and irritating to the skin; and, coming continually in contact with the epidermis, soak into the hair-follicles, where they create an irritation soon leading to induration and increased exfoliation of epithelial scales. This exfoliation is not counterbalanced by increased expulsion of the scales, owing doubtless partly to the large quantities cast off and partly to the usual fatty and lubricating substances mixed up with them, being dissolved out and removed by the 'blue oil,' thus leaving the brittle epidermic masses plugging the follicles and increasing the inflammatory irritation. (The palms of the hands, soles of the feet and knuckles of the fingers and toes — places supplied with sweat-glands but no hair-follicles — escape the irritation from the watery contents of the sudoriparous pores presenting an obstacle to the ingress of the oil.) After a time the hairs on the most exposed parts become atrophic and fall out, but the continued retention of the epithelial masses keeps up the process in the follicles and the induration of the surrounding skin.

"The workmen are in the habit of employing 'shale spirit' to wash the affected parts, whether with any beneficial effect is, I think, doubtful."

The pathology of scrotal cancer is brief; it is epithelioma of the squamous-celled type. In the section on tar and paraffin cancer in his "Surgical Pathology and Therapeutics," Warren says:

"An histological study of the irritated skin shows a growth of the lower layers of the epidermis and of the rete mucosum. The hair-follicles are frequently distended with masses of epidermic cells, and in the deep layers of the rete are found spots of brown pigment. Near the carcinomatous nodules the dividing-line between epidermis and the cutis becomes very irregular, and the interpapillary masses of cells are enlarged and irregular in shape. The skin shows also a small cell infiltration. When the zone of the cancer is reached, there are found enormous numbers of epidermic balls and a polymorphous-cell growth into the deep layers of the cutis. It is evident that we have to do here with a chronic irritation of the skin affecting its epithelial structures for a long time, producing at first hypertrophy of some of these structures, and finally a tendency to indefinite growth, as in cancer."

Bransby Cooper, in his course of surgical lectures at Guy's Hospital, in 1846–7, says:

"I cannot believe that the term 'cancer' is strictly appropriate to this disease; for although it is true that a patient who is the subject of this local affection must have a predisposition to its development, still few cases are recorded in which it has arisen from any other exciting cause than that produced by the irritation of soot. It may, however, be fairly conjectured that when a malignant diathesis prevails, the continued irritative influence of such a substance as soot may produce a malignant local development. Still, however, a mystery is involved in such a view; for as the whole surface of the body is more or less subjected to this source of irritation, it is difficult to understand why the scrotum more than any other part should so invariably become the seat

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of the disease; to this, however, the answer may be that the rugous and delicate character of the skin, the size and number of the follicles with which it is furnished, and perhaps its pendulous position, and, being usually in a moist state, may tend to render it more than any part of the body susceptible to diseased action as the result of continued irritation. A very similar disease is prevalent in the West Indies, under the name of 'sun-wart'; this disease attacks the face in old people, and usually makes its appearance in the wrinkles and furrows which naturally harbor perspiration, and in which the follicles are larger and more numerous than in other parts. Chimney-sweepers' cancer is a very rare disease and is but seldom met with even in the class to whom it may be almost considered peculiar; soot, therefore, must be looked upon not as possessing any particular property of producing this carcinomatous affection, but as merely determining or exciting the action in individuals in whom there exists a malignant constitutional tendency."

In 1866, Curling, in his "Practical Treatise on the Diseases of the Testis and of the Spermatic Cord and Scrotum," page 592, says:

"The ulcer spreads towards its circumference widely and superficially, whilst in the center it burrows deeply, until in many instances it reaches the great vessels of the thigh, destroys their coats and causes death by hemorrhage."

On page 596, he cites a case of Sir William Fergusson's of scrotal epithelial cancer in a man who for many years had worked amongst guano.

On page 598 he reports the case of a sailor of forty-five who had been a chimneysweep as a boy, but for twenty-two years had followed the sea. He had a scrotal cancer of three years' duration.

On page 602, he cites a case of Paget's, a chimneysweep of sixty-six, who had a "cancer-wart" on each hand, and had had a scrotal cancer removed thirty-five years before.

At page 599 Curling further says:

"Chimneysweeper's cancer is a disease almost peculiar to this country. . . . Pit-coal, from which soot is produced, is only sparingly employed as fuel abroad, whilst in this country it is in almost universal use by all classes, and until recently our chimneys were cleansed by climbing-boys, who were consequently exposed from an early period of life to continued contact with soot. But these circumstances seem scarcely sufficient to account for the prevalence of epithelial cancer of the scrotum in England in comparison with other countries, without admitting the existence of a greater predisposition to the disease in the constitution of natives of this country."

He gives as further references:

Paget: Pathology. Richerand: Nosographie Chirurgicale, t. iv, p. 300. Russell: Observations on the Testicles, p. 98, Edinburgh, 1833.

Russell says: "Cases of the chimneysweeper's cancer occur frequently in the London hospitals though very seldom at the Royal Infirmary of Edinburgh.

Warren refers to Volkmann; Charles W. Allen to Andrews.

Richerand in his "Nosographie Chirurgicale," Paris, 1812, t. iv, p. 500.

"Pott parle de certains ulcères qui affectent le scrotum, chez les ramoneurs de Londres. Cette maladie, qu'il décrit sous le nom de cancer des ramoneurs, paroît endémique; on ne l'a point observée en France; et Rammazini, qui écrevoit en Italie sur les maladies des artisans, n'en fait mention dans aucun endroit de son estimable ouvrage. Sans doute que la nature particulière de la suie, dans un pays où l'on ne brûle guère que du charbon minéral, est la cause de ce genre d'affections."

Paget, in his "Surgical Pathology," Philadelphia, 1865, page 629, says:

"A . . . drily scaled or incrusted warty change of the cutis often . . . precedes the chimney-sweep's cancer; and I suspect that the true influence of the soot in this disease is not that its continued contact determines the growth of cancers, but . . . that it produces a state of skin which provides an apt locality for epithelial cancer in persons of a cancerous diathesis. How it does this I cannot imagine, but this is only one of many things unexplained in this strange disease; for the whole of the peculiarities of the chimney-sweep's cancer — its dependence on soot, while coal-dust is wholly inoperative (for the disease is unknown among colliers); its comparative frequency in England, especially in the large towns, while in other countries where soot is abundant it is hardly seen; its selection of the scrotum for its most frequent seat, — all these and many like facts in its history appear completely inexplicable. Still, it is certain that scaly or incrusted small warts . . . are very common in chimneysweeps. . . . Nor are such warts confined to the scrotum; they may exist on every part of the trunk and limbs; and I have seen sweeps so thickset with them that a hundred or more might have been counted."

In modern days, chimneysweeps' cancer has, of course, come to be regarded merely as a form of epithelioma, to which the irritating qualities of soot and the uncleanly habits of chimney-sweeps afforded predisposing local conditions. With increase of popular habits of cleanliness and the extensive employment of mechanical devices for sweeping chimneys, the disease has practically disappeared. Only sporadic cases now occur, usually without determinable cause of local irritation. The history of the disease, however, presents a curious and interesting chapter of medical literature.

I have collected, abstracted, and arranged chronologically, without attempt to enumerate, a series of illustrative cases that have been reported for the most part by English authors. In instances in which the original article was not accessible for verification, I have merely quoted the reference without comment.

CHRONOLOGIC SERIES OF CASES FROM LITERATURE.

1731. *Bassius:* Obs. anat., 8°, Halae Magdeb., 193–197. Scrotum sphacelo consumtum et renatum.

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1740. *Treyling:* Acta Acad. nat. curios., Norimb., v, 440. Scrotum immaniter auctum scirrhoso-scrophuloso.

1790. *James Earle:* Chirurgical Works of Percivall Pott, iii, 258.

In a footnote to the article on cancer of the scrotum in his first edition of Pott's works, he says:

"Since Mr. Pott published this tract, I saw the disease which is described in an infant under eight years of age who was brought into St. Bartholomew's Hospital and was an apprentice to a chimneysweeper. I shewed it to Mr. Pott, who acknowledged it to be the true disease, and that he had not before seen it in so young a subject. It had infected all the lower part of the scrotum, but as the testes had not imbibed the poison, the diseased part being removed, the wound healed and the boy was discharged perfectly well."

Of course, in the absence of microscopic verification, this case lies under strong suspicion of being, not carcinoma, but more probably some form of phlegmon.

1808. *Sir James Earle:* Ed. Chir. Works of P. Pott, p. 182.

A gardener of forty-nine who for five years had had "a large cancerous sore, which reached from the bend of the wrist to the knuckles, occupying almost the whole of the back of the left hand," and which first appeared while he was employed "to strew soot on the ground round the young and tender plants, to preserve them from the slugs. . . . He carried the soot in an old garden pot, which hung on his left hand by a handle over the top, while he strewed it with the right. . . . It is to be remarked that the right hand which strewed the soot was unaffected. Probably from that action it got rid of the effluvia, but the left, being . . . exposed to the vapors or dust arising from the soot, as it was continually stirred up, a lodgment of it was probably made on the thin skin at the back of the hand."

No treatment was of any avail till the patient consented to amputation, which was apparently curative.

1821. *Travers:* Med.-Chir. Trans. (1832), xvii, 346.

A chimneysweep of forty-three, who for three years had had on the scrotum a pimple, which finally became excoriated and ulcerated. The disease was twice removed, but recurred and the patient "died exhausted after some months of severe suffering. His emaciation was extreme. It was remarkable that the testicles, though exposed and shrunk, were not affected by ulceration; on inspection, the entire peritoneal surface was found studded with the small white tubercle of scrofula."

1824. *Henry Earle:* Med.-Chir. Trans., xii, 302.

A chimneysweep of thirty, who for seven years had had on his scrotum a wart which finally began to ulcerate and fungate. He was treated for a time by local applications, but finally submitted to operation, "at which time there was a large fungous excrescence, with hard thickened edges, which nearly covered the whole scrotum, and extended the entire length of the perineum to the verge of the anus. This discharged a profuse, bloody sanies, which excoriated the surrounding skin." The testes were not involved; the glands were enlarged, but later subsided, the patient was discharged well, quitted his occupation and stated that he had "no diminution in his venereal powers."

Page 304: A chimneysweep of thirty-five, who for a year had had a wart on the scrotum, which finally began to ulcerate and involve the right testicle. On admission to the hospital "there was a large deep ulcer extending into the body of the right testis, round which there was a considerable hard fungous growth from the edges of the skin, occupying about one half of the scrotum. This was excised, but recurred twice and was finally fatal. His grandfather, father and one brother had died of the same disease."

1825. *Warren:* Surgical Observations on Tumors, p. 329.

A patient of thirty-five, who six months before first noticed a wart on the scrotum. This became crusted and soon formed an open sore, which, when seen, was oval and the size of a half-dollar. The growth was excised, and the patient was without recurrence in 1848, thirteen years after.

1825. *Jeffreys:* The Lancet, viii, 318.

A chimneysweep of twenty-eight, who for ten years had had a wart on the scrotum. A year before admission, this wart began to ulcerate and to increase in size till it occupied the entire left side of the scrotum and angle of the groin, the left testis being exposed. The patient had a hemorrhage of about a pint from the tumor, which was treated with carrot and linseed meal poultices.

1835. *Syme:* Edinb. Med. and Surg. Jour., xliv, 13.

A chimneysweep of thirty, who two years before had a wart of the scrotum excised. Others soon appeared, and on admission almost covered the scrotum, which was completely removed, with recovery.

1837. *Samuel Cooper:* Dictionary of Practical Surgery, London, 1872.

A chimneysweep of twenty-three, married, had for five years had a small pimple or wart on the anterior part of the scrotum. The growth enlarged slowly, became indurated and two years ago began to ulcerate. On admission he presented "a large irregular ulcer at the lower and anterior part of the scrotum, with elevated, hard and red margins, which were in some parts very thick. The center of it was occupied by a foul adherent greenish slough. The disease did not involve the testes, and was completely excised. The glands were enlarged, but were not removed. The wound healed by granulation, and the patient was discharged well. Subsequent history unknown."

Lane, the editor, adds: "In the present day, the chimneysweeper's cancer is considered by most surgeons in every respect analogous to epithelioma in other parts."

1838. *Hawkins:* Lond. Med. Gaz., vol. xxi, p. 842.

An aged chimneysweep who for forty years had had a cancerous process in the scrotum. He was thrice operated on and finally was in hospital at the same time as his son with the same disease. Even then, his inguinal glands were not involved.

1838. *Gerdy:* Arch. gén. de méd., Paris, 3. s., ii, 385–391. Kystes et tumeurs cancéreuses des bourses et du testicule.

1841. *Welsh:* Lancet, xli, 90.

A chimneysweep who for ten years had had a wart on the right side of the scrotum, which finally began to fungate and ulcerate, presenting on admission "one granular cauliflower excrescence, hard to the touch, and emitting a stinking grumous kind of pus, unaccompanied with any severe pain." The entire scrotum was removed and healed, but a wart reappeared in four months, and two years later the scrotum was again removed, the testes not being involved. The wound was healing well at time of report, but later details are wanting.

1847. *Critchett:* The Lancet, vol. viii, n. s., p. 172.

A chimneysweep of twenty, who for four years had had on the scrotum an ulcerating sore which had spread rapidly in the past year. One uncle died of the same disease. On admission the patient showed an irregularly ulcerated sore on the left side of the scrotum, yellowish, secreting a thin, ichorous, very fetid discharge; the margin was irregular, elevated and hard; the glands of both groins enlarged. The growth was excised, the glands subsided, and the man was well and without recurrence a year later.

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1841. *Liston:* The Lancet, xl, 793.

A chimneysweep of twenty-four who two years before first noticed on the left side of the scrotum a wart, which slowly increased in size. Five weeks before admission it ulcerated and began to discharge. The tumor was excised and the enlarged, indurated inguinal glands dissected out. The wounds healed after suppuration, and the patient was discharged well.

Another chimneysweep of thirty-four, who had three small ulcerating scrotal warts removed.

1849. *Cooper, Bransby:* London Med. Gaz., xliii, 5.

Reports seven cases, all in chimneysweeps aged fifty-one, thirty-four, thirty-one, twenty-eight, thirty-six, thirty-five, sixty-six.

1849. *Bird:* Prov. Med. and Surg. Jour., 127–129.

*Curling:* London Jour. Med., i, 220–223.

*Hutton:* Proc. Path. Soc. Dubl., i, pt. ii, 66–70.

*O'Ferrall:* Proc. Path. Soc. Dubl., i, pt. i, 297–305.

1852. *Stanley:* Med. Times and Gaz., v, 414.

A chimneysweep of forty, whose father had followed the same trade, and who for nineteen years had had a cancerous process in the scrotum, thrice operated on and thrice recurrent, the last time in the inguinal glands, which were removed with apparent cure.

1855. *Stanley:* Med. Circ., London, vii, 202.

Chimneysweeper's cancer and cancer of the penis.

1859. *Stanley:* The Lancet, London, xxxi, n. s., 612.

A chimneysweep of about thirty-five, with two ulcerated tumors on the right side of the scrotum, near the most dependent portion. The glands were not involved. The tumors were excised. Stanley alludes to cancer of the scrotum as "this well-known although now less common disease, which . . . occasionally presents itself for treatment at our hospitals."

1863. *Coote:* The Lancet, London, xl, 420.

A chimneysweep of thirty, who eight years before had had a small wart removed by Stanley (see reference above), had a recurrence four years ago. The growth is now an ulcerated mass involving the entire scrotum and the base of the penis. Growth excised; healing good.

An elderly chimneysweep, in whom the left testis was involved and the glands enlarged, and only partial removal done by Mr. Holmes.

1864. *Stevens:* The Lancet, xlii, n. s., 570.

A chimneysweep of forty-six, "with carcinomatous ulceration of the entire anterior surface of the scrotum of eight months' duration, involving the penis and having destroyed nearly half its structure." Treated by complete removal of the genitalia.

1865. *Putéquat:* Bull. Soc. de chir. de Par., 2. s., vi, 474–477. "Observation de cancer des ramoneurs ou du scrotum."

A gentleman of fifty-five, not a chimneysweep, who had a chancre ten years before, developed on the left side of the scrotum a large, irregular ulcer, with a grayish aspect, uneven surface, thick, hard, elevated, broken and everted borders. Left testis involved but glands not enlarged. The patient, unoperated, died in a year. Putéquat remarks that "cancer of the scrotum is very rare in France," and quotes Samuel Cooper as saying in his "Elementary Treatise of Surgical Pathology," p. 622: "Le cancer du ramoneur est une maladie pernicieuse sur laquelle les médicaments internes et les topiques ont une action faible ou nulle.

*Idem:* J. de méd., chir. et pharmacol., Brux., xli, 509–512. *Idem:* Gaz. d'hôp., Paris, xxxviii, 546.

1866. *Curling:* A Practical Treatise on Diseases of the Testis and of the Spermatic Cord and Scrotum, p. 599.

A chimneysweep of fifty-one, who began the trade at seven, and who for twenty-two years had had a cancer of the scrotum, operated on five times and ultimately causing death from emaciation, with only one groin involved and no trace of internal metastasis.

*Cusack:* Dubl. Jour. Med. Sci., xxi, 137.

Reports excision of a soot-wart from the hand of a female chimneysweep, whose son had a similar epithelioma of the ear.

1865. *Sauné:* Bull. Soc. anat. de Paris, xl, 636. Cancroïde du scrotum.

1868. *Rouge:* Bull. Soc. méd. de la Suisse Rom., Lausanne, ii, 315. Cancer mélanique du scrotum.

1868. *Lawson:* Brit. Med. Jour., London, i, 351.

1869. *Erichsen:* Brit. Med. Jour., London, i, 211.

A chimneysweep of forty-nine, who six months before admission received on the scrotum an abrasion, at the site of which developed a purple scab, followed by a rapidly spreading red growth, which became black and painful. On entrance there was presented a raised and rather pigmented ulcerating growth on the scrotum, which was excised and healed perfectly. Further history unknown.

1874. *Bell:* Edinb. Med. Jour. (1876–7), xxii, 135–137.

A paraffin worker of forty-seven who for five years had had extensive but painless ulceration of the scrotum, with elevated exuberant granulations. He had had several operations followed by recurrence. Glands not enlarged. The mass was widely excised and the wound healed. Further history unknown.

1875. *Gerdy:* Mélanges d' anatomie, 8°, Paris, ii, 450–456.

1875. *Bell.*

A paraffin worker of thirty-four who two years before noticed on the scrotum a small pimple which has grown to a tumor three inches in diameter, involving the right tunica vaginalis and the skin, and yielding a thin discharge. Glands in both groins enlarged but not hard. Mass excised. Wound healed. Subsequent history unknown.

Both these patients had paraffin acne or eczema over those parts of hands, arms and legs not protected by clothing. This is described by Ogston: Edinb. Med. Jour., xvii, 544.

1875. *Gerdy:* Mélanges d'anatomie, Paris, ii, 450–456.

1879. *Cameron:* Glasgow Med. Jour., 5. s., xii, 40.

1883. *Heath:* The Lancet, 1883, ii, 327.

A block-cutter of eighteen, who a year before first noticed a small hard swelling, the size of a marble, in the right lower scrotum. In three months it grew to the size of a hen's egg; four months later the glands in both groins began to enlarge (the right first). No pain till three months ago. On admission, the growth involved the whole scrotum, irregular, nodulated, with a sinus at the bottom, from which was discharged a thin, yellowish, opaque fluid, sometimes tinged with blood. Death followed in four months from hemorrhage. The testes were uninvolved. Pathological report: Epithelioma.

1888. *Wilson:* Prov. Med. Jour., Leicester, vii, 69.

1889. *Butlin:* St. Barth. Hosp. Rep., xxv, 193–200.

During the past twenty-five years, seven cases have been entered in the records of the Massachusetts General Hospital under the diagnosis of cancer of the scrotum. Of these, one was secondary to cancer of the penis; and two, though undoubtedly cancer, were not verified by microscopic examination.[1] There remain, therefore, four cases of unquestionable primary cancer of the scrotum. The history of these four patients I shall report

[1] All three of these cases have since died with a clinical diagnosis of cancer.

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in brief, as a contribution to the case-literature of the subject. For the privilege of making this report I am indebted to the courtesy of those members of the staff of the Massachusetts General Hospital in whose services the cases occurred. I wish to present my grateful acknowledgments to them and to the administrative officials of the hospital who have permitted and facilitated my use of the records. I wish also to thank Mr. Aitken and Mr. Brown for their interest and assistance in preparing the three cuts with which the cases are illustrated.

Case I. M. C., sixty, male, West Surgical, 229–90. Born in Ireland. Laborer. Entered Jan. 10, 1887. For three months patient had had a painful, indurated ulceration on the right scrotum, the size of a half-dollar, which he attributed to scratching. At operation, by the late Dr. C. B. Porter, the mass of tissue underlying the ulcer was removed without opening the tunica vaginalis. The glands in the groin were dissected. Pathologic report by Dr. W. F. Whitney: Epithelioma. After operation the patient had a slight bilateral hydrocele, which, however, soon disappeared, and he was discharged relieved on Feb. 3, 1887. I have been entirely unable to trace his subsequent history.

Case II. T. S., forty-nine, male, East Surgical, 396–102. Born in England. Mule-spinner. Entered Oct. 16, 1901. Six years previously patient had received in the posterior aspect of the left scrotum a wound with a pick, from which had gradually developed a painless ulcer two inches in diameter and not particularly indurated. At operation, by Dr. J. C. Warren, the ulcer was excised with part of the tunica vaginalis, and the glands of the groin dissected. Pathologic report by Dr. Whitney: Epithelioma. The patient was discharged relieved on Oct. 29, 1901, and on June 13, 1908, reported himself by letter as well and entirely free from local recurrence, though he says he has had for years on the calf of his left leg a similar growth which causes him no inconvenience.

Case III. J. O., sixty, male, East Surgical, 458–35, 518–245. Born in England. Spinner. Entered Oct. 3, 1903. A year previously the patient had been tapped for hydrocele, and at the site of puncture had developed a soft, painful, ulcerated, toodstool-like mass, the size of a silver dollar, to the left of the median rhaphé of the scrotum. At operation by Dr. J. C. Warren the tumor was excised and a radical cure of the hydrocele performed. Pathologic report by Dr. Whitney: Epithelioma. The patient was discharged much relieved on Oct. 26, 1904. On Sept. 1, 1905, he was readmitted for recurrence in the glands of the left groin of six weeks' duration. A mass the size of a plum was excised from this groin by Dr. R. B. Greenough, and the patient again discharged on Sept. 28, 1905. He died, however, on Nov. 17, 1905, with scrotal recurrence associated with profound anemia.

Case IV. M. J. F., sixty-four, male, East Surgical, 594–137. Born in Ireland. Currier. Entered Dec. 26, 1907. Four months previously, the patient had been operated for varicocele, and at the scar of incision had developed a hard, ulcerated, painful mass, the size of a horsechestnut, in the left lower anterior aspect of the scrotum. (Fig. 1.) At operation by Dr. F. B. Harrington the tumor was excised without opening the tunica vaginalis, and the glands of both groins were completely dissected. Pathologic report by Dr. Whitney: Epithelioma, glands not malignant. The patient was discharged on Jan. 1, 1908, and has not since been heard from. Fig. 2 illustrates the microscopic appearance of the tumor. Fig. 3 is a drawing of a specimen in the Warren Museum, from a similar case, which I am permitted to reproduce by the courtesy of Dr. Whitney, to whom I wish to express my sincere thanks for this and for the use of his pathologic reports.

These cases are, of course, too few, and their ultimate history too imperfectly known, to warrant any statistical study or inferences. They are presented merely to place them on record. It is interesting to note that all the patients were born in the British Isles and that two of them were spinners, though it is doubtful if these facts are of any etiologic significance. More important is the fact that in three cases there was a definite history of precedent trauma. Only accumulation of more extensive data would, however, justify conclusions on the subject. At present it seems that cancer of the scrotum, in its early stage at least, is one of the forms of superficial epithelioma to which radium treatment would be particularly suitable.

ADDITIONAL REFERENCES ON PARAFFIN CANCER.

*Gawrowsky:* Ueber Schornsteinfeger-und Paraffinkrebs, 8°, Halle, 1904.

*Buchanan:* Tr. Glasg. Path. and Clin. Soc., 1893–5, vol. clxv.

*De Buck v Broeckaert:* Bull. Acad. roy. de méd. de Belg., Brux., 1903, 4. s., xvii, 890–896.

*Also:* Belg. méd., 1904, xi, 63–67.

*Also:* Presse méd. belge, Brux., 1904, lvi, 57–59.

## THE TECHNIC OF ARTHROTOMY. A REPORT UPON AND DISCUSSION OF ONE HUNDRED AND NINETY-EIGHT CASES.

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(From the Orthopedic Clinic of the Carney Hospital.)

[Concluded from No. 20, p. 764.]

ARTHROTOMY OF THE HIP-JOINT. INTRACAPSULAR FRACTURES. EXCISIONS. ERASIONS.

Case 164. M. D., female, thirteen, single. Separation of upper femoral epiphysis. Operation, May 12, 1903.

Incision 12 cm. in length over the anterior aspect of the left hip-joint. On separation of soft tissues the capsule was found intact. No evidence of disease. When opened fracture found to be transverse directly between the juncture of the head and neck. Cartilage clear and smooth. Head vascular and cotyloid ligament small. Shaft of femur rotated out and the whole drawn up by traction so that it was impossible to approximate ebony surfaces, so the periosteum was removed from the shaft of bone below greatest prominence of tuberosity and the head was fixed to this surface with silver wire.

Leg held in complete extension with splint and traction.

June 2. First intention. Apparently good union. Plaster spica applied.

Leg in good position with slight amount of adduction.

June 16. Discharged.

Case 165. C. T., female, fifty-one. Intracapsular fracture neck of right femur. Operation, June 27, 1906.

U-shaped incision employed. Fracture found with fibrous tissue interposed between fragments. The latter was removed and fragments approximated. Two nails

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were driven into femur through great trochanter and neck into the head of the bone. Capsule then sutured. Long T-side splint used to hold leg in position. Later a plaster spica was applied.

Aug. 21. Cast removed, fracture apparently united.

Sept. 1. Flannel spica reinforced with felt.

Sept. 14. Walking with crutches.

Sept. 30. Discharged. Relieved.

CASE 166. J. H., female, twelve, single. Congenital dislocation of hip. Operation, Nov. 11, 1901.

Linear incision 6 in. long over trochanter at central point. Neck of femur found in position of extreme coxa vara combined with a backward twist of the neck. There was an entire absence of femoral head. The neck did not measure over ¾ inch in length. To expose the neck in its abnormal position it was necessary to remove the insertion of the gluteus medius. Neck of bone then removed. Free end of muscle sewed back upon trochanter with silk and fibrous capsule of joint closed.

Dec. 1. Discharged.

CASE 167. J. S., female, twenty-three, single. Congenital dislocation left hip. Operation, May 1, 1907.

Anterior incision used. Head of femur found back on dorsum of ilium. Acetabulum very shallow. Capsule infolded about the head so that it could not be approximated to the acetabulum. In addition, the adductor muscles were myotomized and after enlarging the acetabulum the head was replaced and wound closed. Plaster spica applied with forcible extension and abduction.

May 15. Slight sepsis intervened which has yielded to treatment.

May 22. New spica applied.

June 4. Patient walking on crutches. Wound clean. Discharged home.

January, 1910. Patient walks without artificial support of any kind, and there is scarcely any limp, so well is the shortening accommodated for by an extension boot.

CASE 168. L. W. McP., male, twenty, married. Intercapsular fracture. Operation, March 26, 1909.

Anterior incision, neck of femur exposed. No line of fracture could be made out, but head much lower than normal with relation to trochanter. Capsule opened and wedge-shaped piece of bone removed from neck just behind the epiphysis. Wound closed. Long plaster splint with leg in abduction and internal rotation.

April 21. Spica changed.

May 2. Discharged with spica.

June 23. Readmission. Since discharge has worn spica. X-ray shows marked coxa vara, but apparently firm bony union has taken place. One-inch shortening and very little motion.

June 26. Discharged. Instructed as to exercises. Flannel spica.

CASE 169. D. F., male, forty-three, single. Old fracture internal condyle, knee. Operation, June 29, 1906.

Semilunar incision over inner aspect of left knee. Capsule adherent, so incision was continued as for excision of the joint. Internal condyle fractured, but adherent by fibro-osseous tissue. This tissue was removed and fragments apposed by three silver wire sutures. Periosteum brought over fracture line as far as possible and tied with kangaroo tendon sutures. It was impossible, however, to completely extend the leg or correct the deformity. Wound closed. Posterior wire splint.

Aug. 17. Plaster cast applied.

Aug. 22. Discharged wearing cast. Conditions gradually improved, but deformity remained partially uncorrected.

CASE 170. R. D., male, forty, single. Spur on head of tibia. Bursa over head of fibula. Operation, Feb. 1, 1907.

Bursa dissected out *en masse*. Capsule of knee-joint opened and spur found projecting upwards towards fibula from tibial head. This was removed. No other abnormalities found.

Feb. 10. Discharged. Complete recovery.

CASE 171. J. S., male, thirty-three, married. Intracapsular fracture, right hip. Operation, July 12, 1901.

Incision over anterior surface of the right hip-joint. When the capsule was opened, the fracture was found at the junction of the head and neck. Head of bone displaced downward and forward, but still firmly attached to the acetabulum. The head of the bone was excised in pieces and wound closed. Extension side splint used to hold leg in abducted position.

July 31. Splint removed. Free motion in the joint, but considerable induration about the incision and a small discharging sinus. This healed up promptly and patient has fairly good functional result.

CASE 172. J. T., male, thirty-four, single. Operation, Jan. 14, 1903.

A T-shaped incision was made over the lateral aspect of the left femur just over the trochanter. Neck of the femur exposed, capsule opened and fracture found with an interposition of fibrous tissue between the fragments which caused permanent adduction and instability. This tissue was excised and bony surfaces curetted, then approximated and impacted with leg in abduction. Wound closed. Plaster cast applied to retain abduction with slight flexion.

Feb. 7. Discharged. Recovery uneventful.

June 19, 1903. Motion in flexion limited to within 10° of a right angle. Some permanent outward rotation. Inward rotation limited about one half; abduction restricted to about one third normal.

Left leg, 81.6 cm.; right leg, 83.5 cm. From umbilicus, right leg, 88; left leg, 86.5.

CASE 173. H. B., male, twenty-seven, single. Operation, Feb. 8, 1904.

Left hip-joint opened through incision over inner aspect. An oblique fracture was found partly intracapsular and partly extracapsular. The fragments were not united, but presented a pseudarthrosis. A small amount of redundant cartilage which was interposed between the fragments was trimmed away. The surfaces of the apposing fragments were then curetted. Head found fairly movable. Fragments approximated and a steel wire nail driven through trochanteric fragment, and into the head of the femur. Small wick inserted and wound closed. Leg put up with plaster spica in abduction and slight internal rotation.

Feb. 26. New spica. Union by first intention.

April 8. Discharged, using crutches.

CASE 174. B. McD., male, fifty-eight, married. Operation, Aug. 12, 1904.

Anterior incision used. Old ununited fracture found. The head and fragments of upper part of neck were removed. The remaining upper surface of bone curetted and allowed to drop in towards the smooth acetabulum. Wound closed.

Sept. 16. A few degrees of motion obtained under ether. Gauze spica applied.

Oct. 4. Plaster spica.

Oct. 7. Discharged.

CASE 175. R. D., male, fifteen, single. Operation, April 5, 1907.

Anterior incision used over right hip. It was impossible to bring opposing fractured surfaces in proper relation for wiring, in addition to which the head of

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bone was very friable and in three pieces. The latter were removed and capsule closed. Spica applied in extension and abduction.

April 25. Discharged. Convalescence uneventful.

April 9, 1908. Re-entered hospital.

Arthroplasty was advised, in attempt to attain motion. This operation was performed on following day and extension applied.

May 1. Passive movement shows that motion is present, but causes considerable pain.

May 12. Movement of joint increasing. Discharged.

Case 176. W. McM., male, thirteen, single. Operation, May 28, 1908.

X-ray shows separation of head from neck at about epiphyseal line. Attempt was made to manipulate leg in order to obtain union without incision. Leg was put up in plaster spica with leg and thigh strongly abducted.

June 16. Discharged, wearing spica.

March 15, 1909. Re-entered hospital.

Patient wore plaster spica for about four months and flannel spica since that time.

Left leg in marked outward rotation, complete extension and slight adduction. Few degrees of motion. No abduction. Trochanter, ¾ in. above Nélation's line, 1½ in. shortening with some atrophy of thigh and calf.

March 17, 1909. Operation.

Anterior incision used. Capsule incised revealing very short neck with marked coxa vara, with line of fracture found impacted just behind epiphyseal line. Little displacement. A wedge-shaped piece of bone removed from neck which permitted abduction without force. This brought the neck in perfect apposition with the head. Wound closed. Long plaster spica, including foot, applied.

April 20. Discharged wearing cast.

Case 177. S. A., male, sixteen, single. Operation, Aug. 24, 1908.

Anterior incision used and right hip-joint opened. Head apparently normal. Fracture at epiphyseal line. Opposing surfaces were freshened and after a myotomy of the adductors had been performed the fractured ends were sutured together with silver wire. Wound closed and spica applied with leg in abducted position.

Oct. 9. Discharged home wearing spica.

Dec. 21, 1908. Re-entered hospital.

Patient about on crutches and cane. No pain. Still has 1 in. shortening of leg. Patient put in bed and extension applied for one week.

Jan. 9, 1909. Operation.

Incision parallel to old scar. Silver wire removed from head and neck of bone. Apposing bony surfaces which were not in apposition or united were again freshened. Leg then forcibly pulled downward with slight internal rotation. A wire spike was then driven from outer side of thigh passing through trochanter and neck into head of bone. Leg then put up in plaster spica.

Feb. 10. Spica reapplied. About 2 inches shortening indicates that spica was not sufficient to hold softened bone in position.

Feb. 21. Discharged home wearing spica.

Case 178. L. F. B., female, twelve, single. Permanent flexion with restriction of motion at left elbow following recent fracture of external condyle. Operation, April 29, 1904.

Incision 6 cm. parallel with long axis of arm with center opposite inner aspect of left inner condyle. Muscles separated by blunt dissection, which was continued along flexor surface of coracoid process. All structures then retracted upward. Similar incision made on outer side over external condyle, condyle directed inward and forward as arm was supinated, due to repair of fracture in faulty position. A slice 1 cm. in thickness was removed from the most prominent portion of external condyle on flexor aspect. This permitted a slight increase in flexion, which was measured to 45° beyond a right angle by removal of callus between this and posterior quarter of radial head. Motion not perfectly free, however. Capsule repaired and wound closed, arm secured with adhesive plaster in position of greatest possible flexion.

April 30. No pain, but two outer fingers are numb. Some few degrees in flexion lost.

May 6. Stitches removed, wound healed. Motion in flexion same as during operation. No gain in extension. No forced motion attempted, however.

Discharged home.

Ultimately she secured good function in the arm.

Case 179. A. S., male, fourteen, single. Tubercular hip. Erasion of hip-joint. Operation, Oct. 28, 1901. Usual hip incision made and head of femur exposed. Granulation tissue which filled the fossa was removed. A considerable amount of carious bone was found upon the posterior surface of the neck of the femur, — a lesser necrotic area was found opposite this point on the acetabular rim. Both areas were removed and bony surfaces remaining curetted. Tincture of iodine applied and wound closed. Light traction applied to the leg with sand bags to prevent eversion.

Nov. 27. Discharged, wearing spica.

Further history cannot be obtained.

Case 180. W. K., male, twenty-four, single. Excision of head of femur. Operation May 7, 1902.

Linear incision over right trochanter. Neck of bone practically destroyed. The remaining portion was removed close to the trochanter, cartilage over head of bone lifted off and granulation tissue found underneath. Cotyloid ligament partially destroyed. There was but slight evidence of acetabular disease, but the cavity was curetted and tincture of iodine applied. Wound washed, and closed with provisional sutures.

June 5. Patient has had septic temperature from the second day after the operation. Discharge from wound, which has been profuse, is diminishing in amount. A fluctuating area has appeared in the groin. When incised a large amount of greenish pus was evacuated.

Aug. 9. Patient has steadily grown worse. Again has a profuse discharge and intense pain. Discharged.

No further history can be obtained.

Case 181. I. T., male, thirty-six, single. Arthrotomy. Operation, June 25, 1902.

Large semilunar incision over great trochanter of right femur. The neck of the bone was exposed and found covered with bony spicules. The rim of the acetabulum was thickened and head of the bone presented a mushroom appearance. No motion in the joint. The head and a portion of the neck and a spur on the acetabulum were removed, the former in pieces. No evidence of acute bone disease present. The trochanter was allowed to drop in towards the acetabulum and the divided muscles sutured to capsule after thorough irrigation. Wound closed leaving wick and one provisional suture. Leg put up in abduction with slight traction.

July 7. Measured for hip splint. Slight serous discharge persists since removal of wick.

Aug. 2. Discharged relieved.

Dec. 19. Patient walks about five or six miles a day. Motion in flexion to 45°, abduction limited. No trace of active disease can be found.

Case 182. T. O'L., male, seventeen, single. Erasion of hip-joint. Operation, July 16, 1902.

Incision 10 cm. over great trochanter of left femur. Capsule found much thickened by tubercular granu-

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lation tissue. No evidence of bone disease seen in that portion of the head, and neck exposed. The region about the head and acetabulum curetted and a small portion of the capsule excised. Wound closed and plaster spica applied with leg in slight flexion.

July 22. Patient has had intense pain in the hip and leg since operation.

Aug. 1. General condition poor and getting progressively worse. Wound healed, but lung shows acute tuberculosis.

Aug. 4. Patient died three days after onset of acute peritonitis. No autopsy obtained.

CASE 183. A. N., male, fifty-five, married. Osteoarthritis. Arthrotomy of hip-joint. Operation, Oct. 8, 1902.

Anterior linear incision used. Head and neck of the bone exposed and the femur was found to be firmly ankylosed. Large spurs projected from the posterior rim of the acetabulum. The entire head of the bone was excised and the bony exostoses directly beneath. A large osteophyte 2 by 3 cm. removed. Wound closed with drainage.

Oct. 20. Spica applied under anesthesia, to overcome muscular spasm. External rotation corrected about 20°.

Nov. 16. Plaster cast reapplied. Less tendency to external rotation than at any time since operation. Patient walks about with crutches and can bear some weight upon the affected leg without pain. Discharged.

Dec. 17. Patient has about 15° of motion in flexion and abduction.

CASE 184. D. L. S., male, forty-seven, married. Excision of head of femur. Operation, Oct. 29, 1902.

Anterior incision utilized to open the right hip-joint. Capsule much thickened. Neck of bone separated from adjoining tissues as much as possible and posterior surface found much eroded. The head and neck of the bone were removed. Acetabulum not involved, but showed a slight roughening on its lower, inner aspect.

Wound irrigated and tincture of iodine applied. Posterior opening for drainage. Two wicks left for this purpose and wound closed.

Nov. 5. Patient has now a mild septic temperature. Wound broke down to-day and about 50 ccm. purulent fluid escaped.

Dec. 30. Wound has been dressed daily. One sinus has healed. Discharge diminishing in amount. Patient is about on crutches with crutch splint applied.

Jan. 10. Discharged.

CASE 185. E. G., female, fifteen, single. Tuberculosis head and neck right femur. Erasion. Operation, Nov. 27, 1903.

Longitudinal incision 11 cm. long with middle opposite and posterior to neck of femur.

Capsule was grayish, edematous and contained a small amount of turbid fluid. Cartilage over head of femur thin and readily stripped off. The diseased bone extending 1.5 cm. along upper surface of neck adjoining head, comprising upper and posterior quadrant of head, was curetted out down to hard bone.

Diseased synovial fringes removed as far as possible. Acetabulum not seen, but felt to be smooth and was not disturbed. Tincture of iodine applied and wound closed leaving drain. Extension with 6 lb. weight.

Dec. 21. Few degrees of motion at hip in all directions without pain.

Dec. 23. Plaster spica applied.

Jan. 18, 1904. Discharged.

Re-entered hospital July 9, 1905.

Has psoas abscess and discharging sinus from hip. The abscess was incised and drained.

July 27. Discharged improved.

CASE 186. M. M., female, twenty-one. Tuberculosis of right hip. Excision. Operation, Dec. 1, 1909.

Incision over outer side of hip. When capsule was opened an abundance of granulation tissue was found. Trochanteric portion of neck entirely "eaten away," the head being in contact with trochanter. Capsule smooth, but head of bone rough and eroded.

Head of bone excised and sequestrum removed.

Capsule closed with catgut. Wick inserted and wound closed.

Dec. 2. About 3 lb. extension applied. Wound healed by first intention. Joint still sensitive but much less so.

Dec. 29. Plaster cast applied. Model made for leather spica.

CASE 187. C. T., male, twenty-five, single. Tuberculous elbow. Arthrotomy. Operation, June 25, 1909.

Linear incision to outer side of olecranon and joint opened. Tubercular granulations protruded from the wound. Pannus over joint surface, which was removed as far as possible.

Wound closed and plaster cast applied with arm at right angle.

CASE 188. P. M., male, twenty-six, single. Tuberculous shoulder. Excision. Operation, Jan. 16, 1909.

Five-inch incision over anterior surface of joint. Muscles separated and capsule exposed. Adhesions broken up by manipulation and some motion secured. Cartilage of head and glenoid cavity much eroded. Head of bone atrophied. Most of this removed, together with the upper portion of greater tuberosity, to allow abduction, which was impossible owing to upward displacement. Capsule turned into joint and sutured, as it was not possible to get any fascia. Shoulder spica, arm abducted 60°.

June 13. Spica removed.

June 16. Passive motion.

June 25. Ether manipulation, 25° abduction, few degrees of rotation. All motions were forcibly increased.

June 29. Discharged.

CASE 189. G. A., male, twenty-three, single. Tuberculosis left hip. Excision. Operation, Oct. 17, 1906.

Incision over outer surface of left hip. Capsule opened and a slight amount of pus evacuated. A Gigli saw passed around neck of femur and head of bone excised. Latter showed extensive disease. Acetabulum not involved. Tincture of iodine applied, capsule and wound closed, leaving wick. Traction applied.

Dec. 22. Patient has now a septic temperature. Treatment by tuberculin and pyocyaneus vaccine and local dressing with chlorate of soda. Marked improvement past three weeks.

Jan. 16. Spica applied, under ether, to insure good position of leg.

Jan. 27. Discharged.

CASE 190. G. R., male, seventeen, single. Tuberculosis of hip. Arthrotomy. Operation, Dec. 31, 1909.

A four-inch incision made over outer surface of upper thigh. Head of femur exposed and found dislocated upwards and backwards. Scar tissue in considerable amount dissected away from about head of femur. Latter freed and leg adducted. An acetabulum made, as it was not possible to utilize the old one owing to its shallowness, and the muscular contractions preventing the replacement of the head. Leg then forcibly abducted and rotated inward with traction applied at the same time. Wound closed and plaster spica, foot to chest, applied with leg in above-mentioned position.

Jan. 3, 1910. Patient complains only of the upper part of cast.

Should operation be successful, i. e., ankylosis obtained, an osteotomy is to be performed later.

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Case 191. J. C., male, thirty, single. Tubercular wrist. Excision. Operation.

Long linear incision over dorsum of hand. Capsule found thickened and lined with tubercular granulations. All of the carpal bones involved and were removed. Surrounding area cleaned up as much as possible and tincture of iodine applied. Wound closed and anterior splint applied.

Aug. 31. Discharged.

June 1, 1905. Patient re-entered hospital. Condition of hand has steadily been growing worse. General health poor. Hand was amputated two inches above the radio-carpal articulation.

Case 192. E. H., male, nineteen, single. Infectious arthritis hip. Erasion. Operation, Feb. 10, 1906.

Incision made over right trochanter; joint opened. Head of bone covered with granulation tissue, which was removed and wound closed.

March 9. Patient has a great amount of pain in both hips and knees. Considerable deformity in adduction and flexion with a very few degrees of motion in rotation.

March 16. Right hip-joint opened through scar of previous operation. Capsule opened and head of femur rotated out of acetabulum. It was found to be the site of considerable inflammatory tissue, and it was thought advisable to excise the head and a small portion of the upper part of the neck. Wound then closed, after irrigation, and leg put up in extension.

May 17. Progressive improvement to date. Discharged.

Oct. 25. Right hip ankylosed at angle of 90°. No other deformity. Osteotomy performed and myotomy of tensor vaginæ femoris, ilio-femoral band and outer head of the quadriceps femoris. Wound closed and leg put up in extension on a T-splint.

Nov. 2. Fairly profuse greenish, purulent discharge.

Nov. 15. Pyocyaneus vaccine, 250,000,000.

Nov. 20. Discharge diminishing rapidly.

Nov. 21. Extension removed and plaster cast applied.

Dec. 3. Discharged. Walking on crutches. Leg in fair position.

Case 193. A. B., male, thirty-three, single. Arthrotomy hip. Operation, April 13, 1906.

U-shaped incision over right trochanter. When capsule was opened, a large spur was found projecting from rim of acetabulum downwards upon neck of femur. Spur removed and leg could now be abducted and hyperextended to almost normal limits. Wound closed.

April 27. Spica applied.

May 9. Discharged wearing light spica.

Case 194. M. B., female, sixteen, single. Spur on rim of acetabulum. Operation, June 22, 1906.

U-shaped incision over head of left femur. Capsule exposed and divided. Spur found on upper half of acetabular rim, projecting about ½ inch. When this was removed it was possible to flex and abduct the leg to nearly normal amount.

July 6. Under anesthesia leg manipulated and put up in plaster in 40° flexion.

July 9. Discharged.

Case 195. B. B., male, thirty, married. Operation, Aug. 17, 1906.

On July 11, 1906, hip was manipulated under ether. Flexion obtained to 90°. Abduction 50°, and some rotation.

July 25. X-ray shows spur on upper rim of acetabulum. Left hip-joint opened, spur removed. Cartilage found eroded over articular surface of femur. An inflamed bursa found over great trochanter and removed. Joint irrigated and wound closed.

Aug. 30. Plaster spica applied under ether. Pathological examination of tissue removed at time of operation shows tuberculosis.

Sept. 13. Discharged.

Case 196. M. P., female, thirty, single. Tuberculosis of shoulder. Excision. Operation, Nov. 8, 1901.

Incision 5 inches long made parallel with outer margin of bicipital groove and ½ inch to its outer side. Capsule of joint exposed without cutting any muscle fibers. Head of bone, which was badly diseased, was removed just below tuberosity. The anterior inferior portion of the capsule was markedly thickened and covered with tubercular granulation tissue extending over to cover floor of glenoid cavity. When this pannus was removed cartilage was not found eroded. Tincture of iodine applied. Wick placed to bottom of wound and later closed with provisional sutures. Two silk sutures used to draw fibers of deltoid together.

Dec. 18. Voluntary motion 10°. Passive motion through nearly normal arc. No evidence of acute disease remaining.

Jan. 29, 1902. Can extend arm by climbing wall. With aid of other hand can raise hand to head.

March 5. Motion improving. No pain.

Oct. 24. Excellent result. Can carry food to mouth and comb hair. No recurrence of disease had taken place in 1906, and patient was doing the work for a large family and has fairly good motion.

Case 197. H. C., female, twenty, single. Tuberculosis of shoulder. Excision. Operation, April 26, 1907.

Incision 3 inches long made over internal aspect of humeral head and carried down to bone. Bone chiselled and pieces of soft friable bone found underneath. This was removed. Tincture of iodine applied. Cigarette wick and wound closed. Valpeau bandage.

April 29. Wound clean, wick removed. Patient out of bed.

May 8. Shoulder comfortable. Discharged home.

June 12. Ten degrees motion in shoulder-joint.

April 13, 1908. Pain in shoulder constant for past two weeks, worse at night. X-ray shows some articular destruction. Plaster cast applied to shoulder.

May 12, 1909. Re-entered hospital.

Incision made parallel and immediately to inner side of old scar. An abundance of scar tissue was encountered before reaching the capsule. The latter was thickened. When incised the head of the humerus was found eroded and was removed down to greater tuberosity. Glenoid cavity rough and was curetted. No active disease present here. The posterior portion of the capsule was brought over the excised head and sutured to the anterior portion of the capsule with chromic catgut in attempt to prevent ankylosis.

May 14. Drain removed, wound clean.

May 18. Stitches removed. Has had passive motion daily since last note.

May 25. Discharged home.

Case 198. B. W., female, forty-four. Ankylosis of shoulder, hypertrophic. Excision. Operation, Jan. 26, 1906.

Incision 7 cm. in length over greater tuberosity of right humerus. Capsule opened. Periosteum over tuberosity stripped off and soft bone found with evidence of an old ununited fracture. Head and tuberosity excised, all loose bone curetted out. Capsule then closed. Skin wound also closed and Valpeau bandage applied.

Feb. 2. Stitches removed.

Feb. 14. Shoulder much improved. Discharged.

In this group there were four cases of infection and one death. In the case of the patient who

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died, the infection was not a wound infection, but was due to the lighting up of a pulmonary lesion and secondary acute tuberculosis, but it is included here because the patient died in the hospital within three weeks of the time of the operation upon his joint.

The other infections caused no permanent injury to the joints involved. In the different groups we have the following results: In Group 1 there were seven infected joints and one death; in Group 2, there were four infected joints and one death; in Group 3, there was one infected joint and that case died; and in Group 4 there were four infections, three of the joints, and one death, which, however, was an acute general tuberculous infection following the arthrotomy. Counting the deaths and infected joints altogether as infections, this gives a little over 8% of infections in the 198 patients operated. The mortality figures as a little over 2%.

There has been improvement in our results as time has gone on and the use of urotropine as a routine in arthrotomies is destined, we believe, to materially lessen the risks of infection. It is difficult to summarize the results of a series of arthrotomies performed for so many different conditions and where the results to be anticipated are of such a variable character.

In the main, however, the results which it was sought to secure seem to have been attained in the large majority of instances with measurable success and we feel that arthrotomies may be undertaken for the relief of any of the conditions discussed in this paper without undue risk and that sufficient benefit will accrue to justify the performance of the operation. The technic, however, is one that should be perfected to such a degree that the liabilities of infecting a joint are reduced to a minimum.

## Medical Progress.

### REPORT ON PROGRESS IN ORTHOPEDIC SURGERY.

BY E. H. BRADFORD, M.D.

#### BONE TRANSPLANTATION.

UNTIL recently, the statement of Ollier, presented in 1867, that bone covered with periosteum can, if transplanted, heal and can grow, was generally accepted. The bone, however, should be taken from the same animal. In 1894, Barth showed in his experiment that bone periosteum or medulla dies on transplantion; Marshall, however, found that in young animals parts of transplanted bone will remain. The subject has excited renewed attention since the remarkable case of Lexer (recorded in Report on Progress in Orthopedic Surgery in the JOURNAL a year ago). This surgeon transplanted successfully an entire knee-joint, which was removed from a freshly amputated limb. Most observers report that the bony part of the transplanted piece practically dies. Lexer and Frankenstein, however, find that transplanted bone is, in time, fully vascularized. Periosteum transplanted with or without bone is preserved and capable of producing new bone, and the medulla is partially preserved. The process of transformation of the old bone to new bone is not, however, well understood, as various observers give different findings.

Kausch examined microscopically a dead bone nine months after transplantation, and found all signs of living and organized bone, and although in a pathologic anatomical sense transplanted bone dies, living tissue finally develops in the place of the transplanted bone. Hoffman excised the cartilage of joints of dogs and placed periosteum taken from the tibia of the same animal and caused a remarkable transformation of the end of the bone in adaptation to the function of the joint. Various experiments have been made with regard to the bone-producing power of the periosteum, and the results which have been obtained appear to substantiate the view that the periosteum properly treated has an unusual power of vitality.

Transplantation of bone, if successfully performed, will prove of value not only in filling defects of the diaphysis, but also of the epiphysis, following carious destruction of the joints, restoring motion to stiff joints. Furthermore, in stiffening flail joints and in pseudarthrosis, Codivilla has utilized flaps of periosteum. Lexer, however, recommends bone plugs for faulty union of the femoral neck. A hole is drilled through the neck of the trochanter and a piece of bone covered with periosteum is inserted, and bone plugs have been used to stiffen joints instead of the former method of arthrodesis. This has been successful at the ankle when a bone peg has been driven through the os calcis into the tibia and the ankle-joint. In the knee-joint the procedure has been less successful.

Lengthening of the tibia of dogs of a centimeter and a quarter has been successfully accomplished by performing osteotomy and screwing bone screws between the fragments. Living bone freshly taken from the same individual and covered with periosteum is regarded as the best material for transplantation, but bone can be taken from freshly amputated limbs. One reporter, however, Kausch, uses bone from a collection of bones taken from freshly amputated legs and preserved in alcohol and ether. Russell boils the bones in gelatine solution. Drew has used bone from a lamb; Tomita, that from a rabbit and also from a calf. Lexer prefers bone without periosteum if the old periosteum can be preserved, because of the danger of too extensive proliferation of osteophytes.

The surgical world without exaggerated hopes may anticipate in due time the development of thoroughly practical new procedures presenting a surprising advance in the art of surgery.

#### INFANTILE PARALYSIS.

The attention which has been called to this affection in American medical literature since the epidemic which occurred in New York a few years ago has borne fruit in a number of articles on the

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subject discussing the question of the prevalence and communicability of this affection, and describing various local epidemics with suggestions as to treatment. The excellent work of the Massachusetts State Board of Health, as shown in their recent reports, has called popular attention to the present knowledge of the subject, and the report of the Orthopedic Department of the Harvard Medical School, published in the Boston Medical and Surgical Journal, gives a succinct statement of all that is at present known in regard to treatment. Of great scientific interest are the investigations at the Rockefeller Institute and the Harvard Medical School, as well as elsewhere, showing that the disease can by inoculation be given to monkeys and transmitted from monkey to monkey, thus clearly proving the existence of contagion. Beside the masterly work of Flexner and Lewis, Robertson, Chesley, Gay and Lucas have called attention to the more recent findings in the pathology of the affection and the condition of the spinal fluid both of human beings and monkeys with this affection. But as to the nature of the contagion or the method of transmission, little is at present known. The medical profession is not only eager with expectation, but a condition of exaggerated alarm may be said to exist. It cannot be said that the number of cases of poliomyelitis reported by the boards of health, compared with those from tuberculosis, scarlet or typhoid fever, justifies a strict quarantine as has been recommended. It is certainly a question, though often claimed, whether the disease is more frequent now than formerly, though there is no doubt that more cases of infantile paralysis are reported. It will be remembered that the increase in the number of cases of congenital dislocation of the hip in the hospital records following the advent of Professor Lorenz, if presented in a statistical form, could be used to prove the existence of an epidemic. Until more exact information as to the communicability of this disease has been obtained, the wisdom of a stringent quarantine is questionable. As far as our knowledge goes, although there are a number of comparatively small epidemics which have been reported, in the great majority of cases the disease appears to be sporadic, occurring in widely separated communities.

The exaggerated dread of an unknown contagion may be natural, but unless reason based upon known facts is brought to bear upon the subject, the public may fall into a state of mind resembling that agitated by the fear of malicious animal magnetism.

### SPASTIC PARALYSIS. OPERATIVE TREATMENT.

Spiller, of Philadelphia, in 1905, advocated resection of the posterior roots for the relief of spasticity, and in 1908, Förster, of Breslau, reported five cases operated upon by Lietze by this method, and recently Frazier, of Philadelphia,[1] writes a résumé of the subject with a report of additional cases operated upon by him. He claims that it is established that section of the posterior roots relieves, in most instances, spasticity even of an extreme type and of long duration, whether of cerebral or spinal origin, in adults and children. Of the thirteen recorded cases, this was true in all but one. The operation is not without danger. Of the fifteen cases recorded, two died of shock.

Spasticity in the successful cases is relieved so that passive exercises do not meet with resistance, and annoying and distressing reflex associated movements and exaggerated reflexes disappear permanently though the reflexes are not lost. Voluntary motive was restored to a marked degree in seven cases. Manifestly the operation should be reserved for the cases of severe grade.

Complementary to this, the method of alcohol injections into the nerves controlling the muscles in a state of spasticity is of value and interest.

Cases where this has been done with success are reported in an important paper by Allison.[2] Permanent cures were made, and the method, being without danger, is recommended in cases not benefited by muscle training.

### SCOLIOSIS.

The best method of treatment of scoliosis is a question which still challenges the medical profession. Much has already been learned, but many important factors in the problem remain to be investigated. How largely our schools enter into the problem, what the schoolteacher can do to aid in prevention and cure, how common spinal curvatures are in our schoolchildren, all are questions which need careful investigation.

An attempt at a thorough investigation of this subject has been made by Haglund in Stockholm.[3] A trained specialist of many years' experience, he attempted to determine the number of children with curves of the spine in a public school. His investigation consisted in an examination of 1,600 schoolchildren. The obstacles to the investigation consist in the difficulty of determining a definite fixed standard of pathological curves. His first desire was to learn the number of deformities of the osseous system, including knock-knee, bow-legs and deformities of the feet; but the author was forced by the magnitude of the task to limit himself to an inquiry as to curvatures of the spine. The pupils were at first carefully inspected and those who presented a noticeable deformity of the back and trunk were selected for a more detailed examination. The examiner was surprised at the number of deformities which were found on the first examination. The experience of many years as a specialist helped the examiner to set for himself a standard enabling him to decide what curves were negligible and what needed some form of special treatment. Slight curves were not considered.

From his examination, he found that, of 1,600 children of the school examined, 362 were remanded for special examination, — that is, that nearly a quarter of the school children were in a condition to justify or demand treatment; in

[1] Surg., Gynec. and Obstet., September, 1910, p. 251.

[2] Jour. Orthop. Surg., October, 1910.

[3] Zeitschr. für Orthop. Chir., xxv. Band.

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other words, over 22%. The ages of these children ranged from six to fifteen, and the curves were almost equally divided between boys and girls. If the ages of these children were examined, it was found the largest per cent of curves among boys was at the age of fourteen, whereas the largest per cent in girls was at ages eleven to thirteen inclusive; of both sexes, the largest percentage was from twelve to thirteen. If the curves were divided into two classes, the severe and moderate, it was found that 344 belonged to the second class and 18 to the first class, — that is, to those where other treatment than simple general gymnastics is necessary. In Class one, the less severe type, the girls were slightly in excess, that is, 22 as compared to 21%. Of the severe type, the girls were slightly in the minority, though the number (18) was too small for a definite conclusion.

Again, dividing the curves into two classes according to character, — that is, the scoliotic or lateral curves, and the sagittal or antero-posterior curves, — he found that among boys 90 cases were antero-posterior round-shouldered or hollow-back type and 134 scoliotic type. Among girls, there were 146 of the scoliotic type and 80 of the round-shoulder and hollow-back type. Of the scoliotic type in boys, the age of greatest frequency appeared to be from twelve to fourteen, and of the girls, from ten to thirteen.

Again, grouping the cases according to the need of treatment, he found that 25 children were in great need of special treatment; 86 children could be said to be in need of special treatment; in 158, such treatment was desirable, and in 85 the treatment, although desirable, could be dispensed with without great injury to the patient. He found that although there was but little difference in the percentage of curves in girls and boys, the cases among girls were more severe than those among boys and that the muscular system, as a rule, was not as good in the former as in the latter, and for that reason it was difficult to determine precisely as to the grade of the deformity as far as the bony change was concerned.

In determining the cause of scoliosis, it was important to distinguish between the exciting causes, — as to whether this is due to what may be called the inability of the skeleton to carry its burden, — and it is important to distinguish between the static inability to withstand the weight without distorting change and the ability to carry the burden with muscular fatigue. An insufficiency of the vertebral column can either be due to a morbid condition, like rickets or a similar affection, or to too rapid growth, or can be due to the inability of the ligaments or muscles to hold the column in its proper position. Admitting the difficulty of determining this, he makes use of his own judgment in making a distinction. Taking the cases of scoliosis alone, he finds that there are 283 students out of the 1,600 ranging between fifteen and six where scoliosis existed to an extent needing consideration. The dominating scoliosis type was a primary lumbar scoliosis with more or less compensation upwards. As a rule, the scoliosis was left-sided and rarely right-sided. The connection of this scoliosis type to inequality of the legs could frequently be determined without close investigation in that the inequality of the length of the legs was so great that peculiarity in gait was noticeable. Out of 38 right-sided static scoliosis, 32 have the left leg longer than the right to an extent of ½ to 2¼ cm. Of 175 left-sided static scoliosis, in 137 there was a shortening of the length of the left leg of from ½ to 2½ cm. In the other 38 cases the legs are noticed as equal. It would appear that quite a number of cases of scoliosis in schoolchildren are dependent upon an inequality of the lower extremities, and it is important to determine whether, in addition to this, there was a lack of development of one half of the body, especially on the left side. This Haglund determines by measurements in the upper portion of the body, and he finds that, of the 137 left-sided scoliotic cases, 101 had the shoulder measurement shorter on the left than on the right; of the 32 right-sided scoliotic cases with marked shortening of the right leg, 21 have a shortening of the shoulder measurement.

From this it would appear that a certain number of the habitual scoliotic cases were due to an unequal development on both sides of the trunk. Haglund uses as a means of measuring what he terms the shoulder-blade section, a line drawn from the middle line of the spinous processes to a projection on the spine of the scapula which is easily noticed on palpation and which he found to be constant.

Fully as important as the scoliotic curves are the antero-posterior or sagittal curves, which he thinks are not sufficiently investigated, for the reason that the study of the sagittal curves is an extremely difficult one, as it is not easy to establish a standard between the normal and pathological curves of this nature. There are normal, lumbar, dorsal and cervical curves, the latter being convex backwards and the other concave backwards. It is difficult to establish a normal standard of the amount of flexibility of the spine in these antero-posterior curves, as the character of motion changes in normal growth. The movement of the upper portion to a certain degree is to be regarded as compensatory. In a greater or less obliquity of the pelvis, with a corresponding degree of lumbar scoliosis, the upper curves must be influenced to a greater or less degree. The oblique position of the pelvis also would be influenced by the position of the hip, as the obliquity of the pelvis is greater if the feet are turned outward than if they are parallel.

It is important, therefore, in studying antero-posterior curves, to determine as far as possible the cause, it being established that the insufficiency of the vertebral column can be due either to affections of the bone or to special muscular weakness. The writer is inclined to regard the prevalence of the antero-posterior curves as a valuable index of the general condition of the child.

Although it is difficult in single cases to distinguish between a normal increase or diminution

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of the physiological curves, it is not difficult to recognize pathological curves. These do not consist in an abnormal degree of a normal curve, but an evident alteration of the whole column and an alteration of the normal regions of the different curves and their relative motion. The transition from the physiological mobility of the different regions is such that an amount of motion can take place in the wrong portion of the spine, or the mobility can be too great or too little in relation to that seen in other portions of the spine. This is a matter which requires some experience to determine, but no more than can be obtained by any one who is accustomed to examine the spinal column in children.

Schoolchildren present three types of antero-posterior curves. In the first type, the dorsal kyphosis begins at the union of the sacrum and the lumbar vertebræ. The lumbar lordosis disappears and there remains only a slight alteration in direction, as if the whole consisted of a long curve to the upper cervical region. This curve is entirely due to muscular insufficiency and comes usually in persons of a feeble constitution, anemia or imperfect nutrition. The second type is seen especially in boys of the upper classes, where there is not infrequently a great increase of the lumbar lordosis. There may be a sharp bend; the dorsal kyphosis may be relatively small. This, however, is not always the case, as in certain instances there may be a marked dorsal curve. This is a curve which may be increased by improper gymnastic exercises. Type 3 comprises a pathological increase of the upper portion of the dorsal curve, including also a portion of the upper cervical region. This type is what is commonly called round shoulders. The kyphosis is often very rigid, and there may be a rounding from side to side. It is a very difficult form to treat and is quite injurious, as the excursion of the sternum is diminished and the respiration is interfered with. The cause of this type is not easily understood, — sitting too much with a flattened chest giving superficial respiration, adenoids, low desk and high chairs are perhaps important factors. In addition, what is called the flat back is frequently seen, that is, a back without the usual physiological curves, often with an almost straight line of the sacrum. A fifth type is round back in the upper portion of the trunk without marked kyphosis.

The writer found in examining 90 boys and 80 girls with antero-posterior curves, the largest number at the age of fifteen; that is, the largest per cent in boys at the ages of nine and thirteen, and in girls at twelve, eleven and thirteen. These were either pure antero-posterior curves or combined with scoliosis, or scoliotics in which some antero-posterior curves were noted. In more than half of the children, however, the antero-posterior curves were uncombined with scoliosis. Of these cases of a pure type, none showed an inequality of the length of the legs, nor an inequality in the shoulder measure. The first type is found more common among girls than boys, and when it occurs in boys it is more common in the younger children, but in girls more common in the older children. Type 2 is more common in boys than in girls and in boys older than nine. Type 3 is more common in girls.

The writer concludes from his investigations that the problem is not only a large one, but one which will require the combined efforts of many to solve it. He thinks that good pedagogic gymnastics every day, with out-of-door life, all under the direction of teachers of physical culture who are directly responsible for the physical condition of the children, are desirable. For treatment, it is necessary that the schoolchildren be divided into two classes: one, those which need thorough orthopedic treatment; the second, a much larger group, needs proper school hygiene. Specialists are not yet agreed as to the proper measures of special treatment. Some writers believe that corrective gymnastics alone are necessary. Some writers advocate using the Ling system of gymnastics; others, mechanical stretching appliance in preference, but Haglund considers that this question is immaterial. The kernel of the matter is that active correction should be carried out and that less stress should be laid upon passive correction; energetic treatment is a most important factor. For the ordinary group of mild cases between six and fifteen years of age he thinks no better treatment can be prescribed that the energetic Ling gymnastics. In saying this he does not mean that surgeons cannot accomplish more by more energetic measures, but that the Ling school gymnastics give sufficiently satisfactory results.

### THE INFLUENCE OF RESPIRATORY FORCE ON THE FORM OF THE VERTEBRÆ.

Yansen, after a thorough study of this subject, concludes as follows: That the normal dorsal curves of the spinal column are the result largely of pull of the respiratory muscular apparatus of both sides. The spinalis dorsi muscles are essentially a muscle of inspiration, and probably also the other erector muscles of the spine, but this is less during sleep and after great fatigue or depressing influences. The forward drop of the head or a great increase of the dorsal curve diminishes the inspiratory power of these muscles. Under normal conditions the dorsal curve can serve as a measure of the strength of the back muscles, — the greater the curve, the weaker the back muscles. The inward sinking of the sternum in rachitic cases is caused by the pull of the diaphragm. An habitual scoliosis may be regarded as of respiratory origin; that is to say, if the total muscular tension of the muscular respiratory apparatus is normally balanced on both sides, the curves of the spine are normal, but if there is a difference in the two sides of this muscular pull, scoliosis results.[4]

### FLAT FOOT.

It is only comparatively recently that the fact that the prevalent deformity, flat foot, is a shoe

[4] Zeitschr. für Orthop. Chir., xxv. Band.

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deformity, i. e., that it is not observed in barefooted races.

Bardenheuer, after a careful investigation, confirms this view. He finds also that sandal-wearing monks, and peasants wearing loose wooden shoes, do not suffer from flat foot. Fresh recruits from the German army have a relatively high percentage of flat foot, which is reduced by the leg and foot gymnastics to which they are subjected.

His conclusions are as follows: *Valgo planus* or flat foot is an affection of great importance which interferes distinctly with the activity of the patient and indirectly and correspondingly with the general health. Flat foot is one of the most common of all surgical troubles. The cause of the trouble is the lack of correspondence between the weight of the body and the strength of the muscles. Primarily, it is due to the weakness of the muscles, and the chief cause of the muscular weakness is footwear which injures the strength of the long and short plantar muscles and of the antagonist muscles as well. The primary cause is not to be found in a change of the texture of the bones. Rickets of adolescents of the bones of the feet may, however, act as a contributory cause. The most important means of preventing flat feet is to be found in gymnastics carried out from earliest youth, especially those exercising the toe muscles, combined with instruction in normal gait; the most reliable method for the cure of flat foot is that of enforcing daily muscular exercise, thoroughly carried out. These may be sufficient to cure flat feet of a mild grade, and even in resistent flat foot an improvement in functional activity may result from gymnastics alone. Barefooted individuals do not have flat foot, as the muscles are used and thoroughly developed. Shoes should be so constructed that the activity of the plantar muscles is not interfered with. The front of the shoe should permit of proper adduction of the foot. The patient must learn to walk straight with, as far as possible, the weight falling well upon the front of the foot and especially upon the great toe, using a strong flexion of the foot and the action of supination. Persons running barefooted or wearing sandals walk with adducted feet and do not have flat feet. Hunting shoes and tramping shoes, in spite of their weight, are of aid in flat foot if they are properly constructed. The heel of the shoe should not be high and should be broad. Plates act as a means of support of the sustentaculum tali. Fixed flat foot with strong muscles and without symptoms demand no other treatment than gymnastics, but if symptoms are present, the correction of the deformity followed by gymnastic treatment is necessary. Mechanical treatment of flat foot alone never gives satisfactory results. It must always be united with gymnastic treatment, the latter constituting the most important factor of the treatment. Hallux valgus and the crowding of the three inner toes is a result of the abduction of the front of the shoe. Individuals wearing sandals habitually, i. e., monks, and peasants wearing wooden shoes, do not suffer from flat feet and have strongly developed foot muscles, especially the plantar muscles of the feet. Flat foot is not a congenital deformity, but always an acquired deformity. Flat foot in children is cured by the avoidance of shoes and barefooted locomotion. The *pes planus* of adolescence is usually developed quickly and needs the use of plates and proper functional treatment. Flat foot of adults over twenty years of age can be treated successfully among energetic people principally by gymnastic treatment, though sometimes plates are necessary.

The flat foot of adolescence, if not treated, is liable to develop the fixed contracted *pes planus*. Walking with abducted and pronated feet is especially dangerous. The so-called walking on the inner edge of the foot is quite common among persons of heavy weight [5] after forty years of age.

### CONGENITAL DISLOCATION OF THE HIP.

Schanz recommends a simple method of manipulative reduction as follows: The surgeon stands on the side of the patient opposite the deformity and places one hand upon the symphysis pubis and around the affected hip. The surgeon grasping the limb at the knee, with the other hand flexes and adducts it sharply flexed. The limb is then rotated, the foot and leg being turned toward the outer side until the axis of the leg is at right angles with the longitudinal axis of the body. The head is by this maneuver brought opposite the shallowest part of the rim of the acetabulum. Under a pull with a rocking motion given to the limb, the head is rotated into the socket. Abduction is then applied, pressure being exerted on the head. In this way the contraction of the capsule is stretched.

The method is similar in theory to that recommended by Dr. Hibbs, of New York, but is simpler in not requiring the mechanism used by him.[6]

## Reports of Societies.

### COLLEGE OF PHYSICIANS OF PHILADELPHIA.

SPECIAL MEETING, FRIDAY, OCT. 14, 1910.

THE President, DR. GEORGE E. DE SCHWEINITZ, in the chair.

DISCUSSION ON ACUTE AND EPIDEMIC POLIOMYELITIS.

#### RECENT STUDIES IN THE ETIOLOGY OF ACUTE POLIOMYELITIS.

DR. PAUL A. LEWIS, of the Rockefeller Institute, read this paper by invitation.

#### THE LESIONS OF ACUTE POLIOMYELITIS.

DR. ALLEN J. SMITH, Philadelphia: Much of the study of this subject has been fragmentary because of the difficulty in obtaining specimens from the living child and opportunity for autopsies. The disease has been looked upon as a nervous affection, but last year the feeling of the whole profession changed and it has been ready to take up the view so well borne out by what Dr. Lewis has said, that it is a general infection with local involvements of the central nervous system, leaving behind serious alterations of the central nervous

[5] Zeitschr. für Orthop. Chir., xxvi. Band.
[6] *Ibid.*, Band xxx, 1910.

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system with their sequels extending out into the muscles. More careful examinations should be made, and we need to have more data in connection with the rest of the body.

ANTERIOR POLIOMYELITIS.

Dr. Joseph S. Neff, Director Department of Public Health and Charities, Philadelphia: The results of a careful study of the reported cases of anterio-poliomyelitis in Philadelphia during the last summer demonstrate very little, with possibly two exceptions, and become of value only by adding to statistics for further deductions. The two exceptions are the parts played in the etiology by feeding, and general housing conditions. Of 99 cases in Philadelphia, 6 were breast-fed alone; 11, bottle-fed; 43, mixed-fed, and 38 partook of ordinary table-food. The disease was practically absent in the wards of the city with the highest congestion of population, and the only location showing apparent grouping of cases has the lowest ratio (excepting suburban wards) of population per acre. The study tends to show that general sanitation, crowding and housing conditions do not play a part, at least in Philadelphia, in the etiology of the disease. From observation of all the cases reported it is evident that poliomyelitis is very mildly contagious and much less so than other so-called children's diseases.

Especial attention is called to the fact that the week ending July 23 and the week ending Aug. 6, in which the greatest number of cases occurred, followed the hottest weeks of the summer. The main point to be taken into consideration by health officials, until more definite knowledge of the cause and spread of the disease is obtained, is the means of prevention. Their duty is to prevent the spread of disease, but at the same time the welfare and comfort of the community must be considered. The questions involved are as to isolation, quarantine, exclusion from school of other children in the family, placarding, etc. Up to the present time, and in view of the approaching cold weather, the health authorities of Philadelphia have done nothing further than to order isolation of the patient and the disinfection of all discharges. My own thought is to await developments next spring. Should we have isolated cases only, no further action will be needed. Should the disease become epidemic, my present thought is to compel isolation of the patient, exclude from school other children in the family for a period slightly beyond the period of incubation of the disease, and give written instructions as to the disinfection of all discharges, but I do not believe it will be necessary to placard the house. There seem to be as many secondary cases where isolation has been maintained as where it was not attempted.

SPECIAL FEATURES IN THE SYMPTOMATOLOGY AND TREATMENT OF ACUTE POLIOMYELITIS, WITH SOME DISCUSSION OF ITS PROBABLE PATHOGENESIS, BASED CHIEFLY UPON STUDIES MADE DURING THE RECENT EPIDEMIC.

Dr. Charles K. Mills: In my opinion the probable cause of acute poliomyelitis is some form of protozoon, which is perhaps carried by an insect to be found in the neighborhood of the prevailing epidemic. In the fulminant cases meningitis is commonly present and may be severe; in other cases it is transient, and often absent. In several cases which have come under my observation death has occurred with evidences of involvement of the bulb. Paralysis involving one or two of the ocular muscles has been present in some instances. In one case a moderate degree of facial paralysis was the only residual palsy. A second recrudescence of the acute symptoms was seen in several cases. My investigations show the period of incubation to be usually from one to two weeks. Prognosis as to residual paralysis in the cases I have seen has been relatively bad. In treatment I would advise the use of urotropine in the acute stage; febrifuges, fluid extract of ergot, the large Bier's cups, calomel with salines and rest when possible on the side or in the prone position. Massage or electricity should not be used for several weeks after onset, and such treatment should be conservative in character. As a rule operative procedure should not be carried out for several months. Occasionally some kind of support to prevent possible deformity is advisable.

Dr. B. Franklin Royer, Harrisburg: The studies made by the Department of Health lead to the suggestion that the disease is a systemic one, showing only occasionally paralysis as a symptom. Some of the cases show fever and go no further. From the standpoint of some observers deaths attributed to bronchopneumonia in which the fever has been high were in reality due to poliomyelitis.

Dr. F. X. Dercum: Holt and others have come to the conclusion that the contagion is spread by human carriers not in themselves infected. The mucous membranes and the digestive tract should receive special attention, and certainly the close contact of children who are ill should be avoided.

Dr. J. P. Crozer Griffith: Danger comes from the abortive cases because of the inability to recognize them. Therefore, some test by which these cases can be determined should be devised.

Dr. Hobart A. Hare: I believe that if the physician will simply attend to the ordinary hygienic measures the recoveries will be far greater in number than with the active medication of the patient. After the sharpness of the attack, attention may be paid to strengthening the partially destroyed cells.

Dr. John K. Mitchell: I believe that damage is done by too early and too severe treatment. Physicians should not yield to demands of parents that something be done, but should insist that six weeks or two months be allowed before special measures are used. He should particularly avoid the ordinary mistake of allowing the child to sit up too soon. I have seen lateral curvature the result of this mistake. Electricity should not be used under six or eight weeks, and there should not be discouragement from getting no result in the early treatment. The only satisfactory rule about the use of electricity is that the current that will produce the result is the one we want to use.

Dr. John B. Roberts: I understand that this disease is believed to be transmitted usually by infection through the nasal and faucial mucous membranes. If this theory is correct, is it not a physiological error to encourage or adopt the prevalent practice of total extirpation of the faucial and pharyngeal tonsils in children in whom there is inflammation and hypertrophy of these organs? The glossal, faucial and pharyngeal tonsils are adenoid structures apparently placed as sieves or guardians of the alimentary and respiratory tracts to arrest the entrance of microorganisms into the general circulation. The occurrence of poliomyelitis more frequently in children of the well-to-do than in those in the lower walks of life may perhaps be due to the fact that such well-born children are now-a-days deprived by operation of these organs more commonly than the children of the poor.

Dr. William G. Spiller: I have seen one case in which lumbar puncture with the removal of an ounce and a half of fluid relieved the intense pain and the difficult breathing.

Dr. Henry W. Cattell: That which is done abroad to a very large extent is the application of a plaster of

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Paris cast to maintain a proper position of the child in bed.

DR. ALFRED GORDON: The manner of transmission of the disease and the resistance of the virus to cold are important factors in prophylaxis.

DR. DAVID REISMAN: One cannot escape the view that infantile paralysis is one of the transmissible diseases. Even though the contagion may be slight, in view of the terrible nature of the disease, all possible precautions against its transmission should be taken. It has also occurred to me that some of the cases of polio-encephalitis occurring sporadically in children and in adults may have the same etiology as anterior poliomyelitis. A short time ago I saw with Dr. Hand a man, also seen by Dr. Mills and Dr. Spiller, who seemed to be suffering from an hyperacute attack of polio-encephalitis, the first symptom having been facial paralysis. I have also in mind another case of polio-encephalitis, that of a little boy of eight, who after a desperate illness made an almost complete recovery. Nothing remained except diplopia, due to a weakness of the external rectus. It may be, from an epidemiological standpoint, very important to trace the relation of these cases to epidemic anterior poliomyelitis.

## Book Reviews.

*A Plea for the Home Treatment and Prevention of Scarlet Fever.* By ROBERT MILNE, M.D., Ch.M., Medical Officer of Dr. Barnardo's Hospitals and Homes for thirty years, etc. Pp. 80. New York: William Wood & Co. 1910.

This little book is a presentation of Dr. Milne's claim that, if patients with scarlet fever are anointed with eucalyptus oil and have their tonsils swabbed with one to ten carbolic oil, isolation is unnecessary. This is either a wonderful discovery or an error in observation!

*Gynecological Diagnosis.* By WALTER L. BURRAGE, M.D. Pp. xvi, 656; 207 illustrations. New York: D. Appleton & Co. 1910.

In this volume of over six hundred pages Dr. Burrage has produced what seems to your reviewer a model for works of its kind. As the title implies, the writer has chosen to confine himself strictly to diagnosis, — there is not a word as to treatment from cover to cover, — and the field has been covered with a thoroughness and the writer's views expressed with a clean-cut terseness that make the book very pleasant reading. It is probable that it was designed primarily for the student, but we feel sure that it will appeal quite as strongly to men who have been in practice for years.

The first ten chapters are devoted to methods of examination and, as might have been expected from a man with Dr. Burrage's keen insight into the meaning of symptoms, there are two extremely readable chapters upon the interpretation of the clinical history and the significance of the chief symptoms of pelvic disease, — the latter a godsend to the perplexed physician, — and throughout the book stress is constantly laid upon the meaning of symptoms. The chapters upon the physical examination and the armamentarium are eminently practical and contain many hints as to special technic suggested by the writer's experience. We note rather with surprise that the author does not approve of the routine use of rubber gloves for examination, being ourselves accustomed to think that they do not interfere with the tactile sense to any appreciable degree and that their use is an added safeguard both to patient and physician.

The rest of the book is devoted to special diagnosis, and very wisely, we think, the writer has devoted considerable space to certain matters that are generally more or less slighted in gynecological works, such as diseases of the rectum and of the breast, — the latter surveyed of necessity in rather a cursory manner, — an excellent chapter upon the diagnosis of the gynecological affections of infancy and childhood, and another, equally good, upon the menopause and old age, containing a suggestive résumé of the physical conditions present in 115 cases at the menopause occurring in his own practice. Dr. Burrage emphasizes strongly the vital importance of the prompt investigation of all symptoms occurring at this period of a woman's life, instead of following the all too common and dangerous practice of ascribing almost everything to the "change of life."

Considering the chapters on special diagnosis somewhat in detail, we note that the author has throughout avoided burdening the book with overmuch pathology, although at the beginning of each chapter we have the essentials of the pathology of the subject under consideration and a résumé of the latest views about it. We were also struck with the graphic account given of various types of gynecological disease, e. g., that of pelvic inflammation. A thoughtful chapter upon the causes of prolapse will well repay reading, as will also that upon ovarian tumors. We note that the author follows the excellent Pfannenstiel classification of these tumors. The chapter upon diseases of the vulva contains much that is generally to be found only in special works. The chapter upon the diagnosis of pregnancy is exceptionally good and strictly up to date, as, for instance, in the reference to the work of Underhill and Rand upon the changes in the urine in the pernicious vomiting of pregnancy. The great interest that Dr. Burrage takes in the diseases of the bladder and ureters is shown by the two very satisfactory chapters upon those subjects. Here, as elsewhere, we are struck by the constant warning of what not to do. We recognize with sorrow that the sins of the would-be gynecologist are quite as frequently those of commission as of omission.

As a whole, the book is an excellent piece of bookmaking. An alphabetical index of illustrations is valuable, as is also the system of having each chapter headed by a résumé of its contents with page references. While not padded with unnecessary illustrations, the book contains quite sufficient, including many excellent original ones by Miss Spaulding and Miss Heustis.

We feel that this book is a distinct addition to our working library and hope that its well-merited success will spur the writer on to prepare a companion volume upon gynecological treatment.

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THE BOSTON

Medical and Surgical Journal.

THURSDAY, NOVEMBER 24, 1910

*A Journal of Medicine, Surgery and Allied Sciences, published at Boston, weekly, by the undersigned.*

SUBSCRIPTION TERMS: *$5.00 per year, in advance, postage paid, for the United States, Canada and Mexico; $6.50 per year for all foreign countries belonging to the Postal Union.*

*All communications for the Editor, and all books for review, should be addressed to the Editor of the Boston Medical and Surgical Journal,* 809 *Paddock Building,* 101 *Tremont Street, Boston.*

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## THE ABOLITION OF PUBLIC ABOMINATIONS.

IN an editorial in the issue of the JOURNAL for Oct. 13 on "Some Public Abominations," we referred to the common roller-towel as one "whose abolition should go hand in hand with that of the public drinking cup." Interesting confirmation of this statement is found in a recent bulletin of the New York State Health Department at Albany, N. Y., which says: "The public drinking cup must be branded as a public nuisance and must give way under the weight of public opinion enforcing the conclusions of the sanitarian; and with the common drinking cup ought to go the common towel, which at times may prove even more dangerous than the common cup." It is evident that the gospel of public hygiene is making converts. Anent the abolition of public cups in Massachusetts, it is also interesting to note a recent letter to the daily press from a correspondent who suggests that the continued use of common communion cups in churches is a violation of the new ordinance and pertinently queries whether "the church that persists in the use of the single cup in the communion service" does not "deprive many thinking people of the very help and comfort offered them." At the time when the bill for the abolition of common drinking cups was pending before the state legislature, we published in the issue of the JOURNAL for March 31, 1910, under the heading of "Religious Opposition to a Hygienic Measure," a note calling attention to this very matter of the communion cup as furnishing to certain people a ground of objection to the proposed law. That law has now gone into effect, and it should seeem that, with all due respect to tradition and sentiment, its provisions might properly be enforced in the church as well as in the market place.

In other matters as well as in that of drinking-cups there seems to have been recently in Boston a local recrudescence of interest in certain public abominations. One of the irritating and dangerous abominations, associated with the dryness of our climate, is that of the dust which, in the absence of rain and the presence of wind, fills our city streets with choking and irrespirable particles, and our respiratory tracts with foreign bodies and assorted bacteria. Dust is one of the most potent agents in the dissemination of pulmonary disease and of chronic nasopharyngeal disturbances predisposing thereto. Neither street-watering nor oiling avails to check it more than temporarily. Now it is reported that the superintendent of streets in Boston is about to try for this purpose a new chemical preparation, presumably calcium chloride, which by its deliquescence keeps the streets moist by drawing water from the atmosphere. Such a preparation has been tried in several large American cities with considerable success. At any rate, the abolition of public dust would be a worthy hygienic achievement.

Finally, we have had in Boston during the past week a renewed crusade for enforcement of the statute against promiscuous public expectoration, — a "spit war," as it has been euphemistically designated by the yellow press. A general order was issued by the police commissioner directing more rigorous enforcement of the law, with the result that a number of arrests were made and a number of offenders fined $2 each. Various humorous incidents occurred during this campaign. One offender, who was fined only $1, remarked that it was cheaper to spit in his quarter of the city than elsewhere. Another, an Italian, on being searched after his arrest for spitting, was found to be carrying a loaded revolver; he was fined $2 for expectoration and $25 for carrying a concealed weapon. It might prove a valuable augmentation to the public treasury to arrest and search all citizens periodically. Most exquisitely subtle and ironical of all was the suggestion that women, children and the poor and ignorant be not arrested for spitting, but only well-dressed gentlemen. *Noblesse oblige encore.* After all, the anti-spitting crusade, though as yet of too short duration to produce notable change in public manners, has been interesting and profitable, and, if it turns out to be more than a transient burst of enthusiasm, may prove a genuine step towards the abolition of one more public abomination.

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## ONE ASPECT OF VENEREAL PROPHYLAXIS.

SOME of the phases of venereal prophylaxis touch unexpected places in the social fabric. One is the question of the division of responsibility between the individual who has contracted venereal disease and society which has permitted his infection. It happens that in the navy this is far from being an academic question, because the very practical matter of determining whether a man with venereal disease shall be considered to have received his infection "in line of duty" or otherwise comes frequently before medical officers, and their decision is of much importance both to the individual and to the service. It is the practice to consider venereal disease as contracted "in line of duty" only in those cases, which are by no means uncommon in the navy, in which infection has been innocently acquired. Perhaps this is the only just way, and yet the fact is being recognized more and more clearly that there is a certain responsibility, if not actual liability, which rests with the naval service for the enlisted man who becomes infected with venereal disease while serving his country afloat.

In an exceedingly interesting article in the *United States Naval Medical Bulletin*, Passed Assistant Surgeon Heber Butts discusses the justice of regarding general paresis as a disease which may be contracted in "line of duty." Since 1899 twenty-seven cases of general paresis have been admitted to the Government Hospital for the Insane from the active lists of the Navy and the Marine Corps. Seventeen of these cases were given "line of duty" in the reports of medical boards of survey. But practically all cases of general paresis give a positive Wassermann reaction, and Dr. Butts says that it seems fair now to conclude that cases of general paresis should be given "line of duty" only if positive evidence is furnished that syphilis was innocently acquired. If the mode of infection is to remain the test in cases of syphilis which do not result in general paresis, it seems only fair to apply it when that disease occurs.

At first thought it seems absurd to hold that the government is responsible at all for the enlisted men of the navy who contract venereal disease, and yet Dr. Butts shows that it is by no means easy to say just where the responsibility of the individual ends and the responsibility of the service to the man commences. He takes, as an instance, a farmer boy who enlists at some inland recruiting station as a coal-passer. "The navy takes him out of an environment in which, it may be assumed, prostitutes are few or unknown, and there is comparatively small danger of his becoming infected with syphilis. Sooner or later in the course of his service he is taken to an environment, — perhaps to the Orient, — to the fabled land 'east of Suez,' where he is told 'there ain't no Ten Commandments,' where syphilis is rife, where prostitutes are many, and where the restraining influences of father, mother, sister and sweetheart are removed. He frequently finds time passing slowly; clean places of amusement are few or absent; he feels an impulse while in Rome to 'do as the Romans do,' and the army of prostitutes which frequently follows a fleet like birds of prey exerts an influence amid conditions which in his home community did not exist. The responsibility for the acquisition of syphilis, general paresis or tabes by that young man may not be entirely his own. The naval service should share in it, I am convinced; though not to the degree of giving him 'line of duty' and a pension. That responsibility, too, on the part of the naval service increases according to the degree to which it is possibly able to protect its personnel from syphilitic and parasyphilitic diseases and fails to do so. The greater the opportunity to protect, the greater the responsibility."

One cannot help applying this to conditions in civil life. The young farmer whom Dr. Butts takes for his example might have gone to a distant city to make his way instead of enlisting in the navy. He would have lost the protecting influence of his mother, his sisters or his sweetheart in nearly the same degree, and temptation might come to him there in nearly as attractive guise and nearly as insistently as in the navy. Of course if he yielded and became infected with syphilis, a very large share of the responsibility would rest with him, but only the most superficial reasoning could convince one that some share would not rest also with the community which either neglected its "social problem" altogether or else turned it over to corrupt authorities to solve in the manner which would yield the largest return of financial gain or political profit.

In the navy the responsibility is recognized, and there is a growing tendency to meet it by providing proper recreation for the enlisted personnel and by an energetic and very successful effort to limit infection by applying prophylactic treatment to those who have been exposed. It is a question whether in civil life we have recognized our responsibility so clearly or considered very seriously the adoption of measures to prevent infection. Probably it is too radical to sug-

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gest that dispensaries should be established in certain parts of the city where young men who have been exposed might secure preventive treatment at any hour of the day or night by methods which have proved so useful in the navy, but, if we admit that the community has even a small part of the responsibility which is so freely recognized in the naval service, it is difficult to find the most logical reasons why no such efforts should be made.

## ADMINISTRATION OF THE ROCKEFELLER FOUNDATION.

In the issue of the Journal for March 10, 1910, we commented editorially on the establishment by Mr. Rockefeller of the Rockefeller Foundation. Plans for the incorporation of this foundation are still in progress. In an address last week before a session of the National Association of State Universities at Washington, D. C., President Schurman, of Cornell University, criticised the terms of the charter as proposed in the bill now before the national legislature whereby the administration of the fund is placed in the hands of a self-perpetuating board of trustees. Instead, he suggests a governing board similar to that of the Smithsonian Institution, which has a board of regents composed of the Vice-President and the Chief Justice of the United States, three members each of the Senate and of the House of Representatives, "together with six other persons, other than members of Congress, two of whom shall be resident in Washington and the other four inhabitants of some state, but no two of the same state."

The disadvantages and possible dangers of either method of administration are obvious. Whichever be selected, it is important that the control of so vast a fund, with such enormous possibilities for public good or evil, be determined only after mature deliberation and sagacious counsel.

## SPREAD OF ANTITYPHOID INOCULATION.

The experience of the Massachusetts General Hospital in the control of typhoid infection among its nurses and ward-tenders by means of antityphoid inoculation has already led to the adoption of voluntary inoculation among nurses and internes of several other hospitals in Boston. As we have several times pointed out in the columns of the Journal, the procedure is simple, free from danger, produces little or no inconvenience and apparently affords a high degree of immunity against the disease. Not to take advantage of such a valuable discovery in preventive medicine is indicative of either inertia, prejudice or unreasonable fear. It is probably too much to hope as yet for the establishment of compulsory general antityphoid inoculation, but the spread of voluntary inoculation is gratifying and should be continuous. Physicians and nurses should be the first to set in their own persons, and in those of their families, an example of intelligence and progressiveness; and physicians particularly should explain to their patients the nature of the inoculation, and should urge upon them the adoption of this wise and beneficent measure of self-protection. Those who know best the dangers of typhoid should lead in the attempt at its extermination by prevention.

## DECLINE OF NATURAL INCREASE OF POPULATION IN THE UNITED STATES.

The latest bulletin of the United States Census Bureau presents the data of population in the states of Rhode Island, Michigan, Missouri, New Mexico, Delaware, Vermont and Massachusetts. During the decade from 1890 to 1900 these states showed an aggregate increase in population of 18.4%; from 1900 to 1910 their increase has been only 14.9%. Assuming that they are fairly representative of the entire Union in quality and distribution of population, and that the total rate of increase throughout the United States in the past decade has been approximately 15%, — though such assumptions are justifiable only for purposes of speculation, — the total population of this country in 1910 may be expected to be about eighty millions, an increase of fourteen millions since 1900. But of this increase about one half has been due to immigration, so that the actual natural increase in population would be only seven millions, or about 10%. This is about the same rate as that of England, and considerably lower than that of Germany. In the United States the excess of births over deaths has steadily declined since 1850, and at its present rate of decrease our population, without immigration, would become stationary by 1950. Until the completion of the data of this census, such comparisons are purely hypothetical, but it seems probable that the decline of natural fecundity is as well marked in our country as among other English-speaking peoples, though not yet so far advanced as in France. What this probability

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may portend in ultimate racial development, no human judgment can forecast. From the analogy of other national histories, however, it should seem to indicate the inevitable future supplanting of our race by aliens as inheritors of our language, institutions and ideals.

## PROPORTION OF PHYSICIANS TO POPULATION IN GERMANY.

Overcrowding of the medical profession seems not to be confined to large eastern American cities, or even to the United States. A recent report by the United States Consul-General at Dresden indicates that in many parts of Germany the number of physicians has shown a much greater proportionate increase than the total population. During the twenty years from 1883 to 1903 the population of the Province of Brandenburg increased 55%, and the number of doctors increased 302%. In Posen the increase during the same period was 17% and 106% respectively, and in Berlin 69% and 155%. In Saxony from 1883 to 1906 the population increased about 48% and the physicians nearly 126%. Even so, however, the ratio of physicians to population is not as high in Germany as in many American cities. In Berlin at present there is one doctor of medicine to 776 inhabitants; in Saxony, one to 2,016; in West Prussia, one to 3,102; in Posen, one to 3,246; in Reuss, one to 3,723. After all, overcrowding is only a relative term, and keenness of competition, or rather emulation, should result in the medical profession, as elsewhere, in the evolution of higher types of efficiency through the process of selection.

## THE CARNEY HOSPITAL AND THE RETIREMENT OF SISTER GONZAGA.

It is announced that Sister Gonzaga, for thirty years associated with the Carney Hospital in Boston, and sister superior since 1889, has been transferred by the head of her order to Baltimore. During her incumbency as sister superior she has been virtually the head of the hospital, combining, in a way, the duties both of superintendent and trustees. It is largely due to her progressive spirit that the Carney Hospital has shown the remarkable development of the past few years.

On April 1, 1891, an addition to the hospital was opened at a cost of $148,082.75, and in 1901, a new out-patient department building at a cost of $91,000. A little later a new lighting and heating plant, a laundry, mortuary and stable were added to the hospital equipment. Boilers, dynamos for power and light and a new elevator have been installed this year. These additions to the hospital have demanded the raising of a considerable sum of money, in which Sister Gonzaga has taken an active part. Even more important than these material additions to the hospital plant was the creation, eight years ago, of a continuous single headed surgical service, to which Dr. John C. Munro was appointed and which he still holds. At about the same time a similar service was established for the orthopedic department under Dr. J. E. Goldthwait and later under Dr. C. F. Painter. Three years ago a continuous medical service was instituted under the charge of Dr. Henry A. Christian, and two years ago a similar gynecological service under Dr. F. W. Johnson. The establishment of these various services was very largely due to the influence of Sister Gonzaga, who saw in this method of hospital organization an opportunity for increased efficiency. These continuous services were the first to be established in this community, although other hospitals are by degrees adopting a similar plan. It should be borne in mind that this policy at the Carney Hospital was instituted with no idea of increased efficiency for medical instruction, since at that time the hospital had no medical school associations.

During her long period of service as the head of the hospital Sister Gonzaga selected the staff without reference to religious belief, and thereby made it one of the most progressive in the community. She leaves with every regret on the part of the staff. It is to be hoped that her successor will continue her policies, particularly in selecting the best available men for staff positions in a nonsectarian spirit.

## MEDICAL NOTES.

Award of Nobel Prize for Chemistry. — Report from Stockholm states that the Nobel prize for chemistry has recently been awarded to Prof. Otto Wallach, of the University of Göttingen.

Alleged Fever Temperature of 116°. — From Maysville, Ga., comes an entirely unauthenticated press report of a patient in that city who had a temperature of 116° F. Such mythical statements may well be taken with the same incredulity accorded to accounts of babies weighing over fourteen pounds at birth.

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A Suspected Case of Leprosy in a Laundryman. — Report from Passaic, N. J., states that on Nov. 16, Mark Lee, a Chinese laundryman of that city, was taken to the isolation hospital as a leprosy suspect. His laundry has been fumigated, all the clothing therein sterilized and the carriage in which he was driven to the hospital has been burned.

A Tuberculosis Hospital for New Brunswick. — Mrs. James C. Jordan is reported to have presented the New Brunswick government with an estate at River Glade, valued at $30,000, to be used as a tuberculosis hospital.

A Living Centenarian. — Mrs. Thomas Chase, of Everett, Mass., is said to have been born on Nov. 17, 1810, in Warner, N. H. She was married in 1829 and has had six children. Her health is at present excellent, and her interest in current events unabated, though she is reported not to care for "modern amusements."

The Typhoid Epidemic at Annapolis. — The epidemic of typhoid fever among naval cadets at Annapolis, Md., which we noted in the latest issue of the Journal, has extended. During the past week, seven new cases which developed at the academy were sent to the naval hospital, and four other cadets are under quarantine suspected of having the disease. The source of the infection has still not been determined, and its origin seems the more unaccountable since there is not at present a single case of typhoid in the city of Annapolis.

Two Centenarians. — Peter Borry, who died last week at Reading, Pa., was locally reputed to have been born in 1808. He spent his entire life on a farm and is said to have attributed his longevity to moderation in the use of alcohol and tobacco. Many equally temperate men, however, have failed to live as long.

Mrs. Lucinda Adams, who died last week in Johnstown, N. Y., is said to have been born on Nov. 24, 1808. Her general health, vision and memory are reported to have been unimpaired until a fortnight before her death. In her later years she became particularly fond of motoring, and was much interested in aviation. She is survived by six children, sixteen grandchildren and twenty-two great-grandchildren.

"Osler in Chinese." — It is stated on the authority of the *London and China Telegraph* that Osler's "Principles and Practice of Medicine" has been translated into Chinese by the president of the China Medical Missionary Association at Shanghai. It is said that this is the only authoritative work on the practice of medicine as yet available for the Chinese in their own language. Translations of various other medical works are also in progress, among them an Atlas of Anatomy, which, presumably, will be of special value since dissections of the human body are not yet permitted in China.

Appeal for Red Cross Endowment Fund. — The Red Cross Society of America has made an appeal to the public for contributions in small amounts towards the sum of $2,000,000 which it is desired to establish as a permanent fund for the endowment of the society. A general committee has been appointed in charge of the subscriptions, with a sub-committee in each of the principal cities of the Union. The value of the work done by the Red Cross in times of peace as well as of war is unquestioned, and the nobility and integrity of its purposes unassailable.

Dr. Grenfell in Boston. Work of Miss Holman. — In the issue of the Journal for Nov. 3, we commented editorially on Dr. Grenfell's romantic and beneficent work among the natives of Labrador and the north. Dr. Grenfell arrived in Boston on Nov. 20, and will remain for a short time in this vicinity, making several public addresses relative to his work and the increasing possibilities of its service. In December, he will sail for England and will return thence in May to Labrador.

A work similar in kind to Dr. Grenfell's, though very different in environment, is that which for the past eight years has been done by Miss Lydia Holman, a nurse among the mountaineers of North Carolina. At a meeting of the Twentieth Century Club in Boston last week this heroic woman told the story of her hardships, efforts, successes and failures. During this time she has covered day and night in all sorts of weather, alone and often on horseback, a territory of sixty square miles, ministering to and relieving and endeavoring to teach an ignorant and superstitious peasantry. Her present project is the establishment of an infirmary and social settlement for the aid and extension of her work, an undertaking in which she should have the warmest support and encouragement.

Vaccination Laws in Germany. — The present vaccination laws of Germany, enacted in 1884, make it compulsory for every person in the empire to be vaccinated not only in infancy, but again at

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the age of eight and again at eighteen. Since this regulation has been in force, there has not been a single death from smallpox in the German army. This fact, which is eloquent testimony to the efficacy of protective inoculation, may well make the medical profession in America envious of the laudable stringency of German law. The paternalism of Teutonic government makes it an effective machine in medical prophylaxis.

SMALLPOX AMONG THE ARAPAHOES. — In a recent issue of the JOURNAL we commented on the well-known peculiarly malignant virulence assumed by certain infections among aboriginal peoples. During the four days from Nov. 14 to 18, ninety-three Indians are reported to have died from a sudden epidemic of smallpox on the Arapahoe Reservation near Cheyenne, Wyo. Doubtless the rapid fatality of this always dangerous disease is favored by the ignorance and prejudice of the Indians, but it seems at least in part an evidence of the high susceptibility to pestilential infections of our native tribes.

PROBLEMS OF THE OPIUM TRAFFIC. — At the annual session of the National Association of Wholesale Druggists, held last week at Dallas, Tex., Charles A. West, of Boston, chairman of the committee on legislation, recommended "an international tax on opium manufactured for smoking purposes." It is to be presumed that this suggested law is intended to be prohibitive in its action. The Association voted to hold its next meeting in October, 1911, in New York City.

In this connection it is interesting to learn of the alleged preparation by the Chinese of an appeal to Great Britain to abrogate the two treaties which give private British interests the right to engage in the opium trade. Ostensibly this request is for the purpose of diminishing the amount of illicit traffic in the drug. Actually one cannot help suspecting the motives of a people to whom complete control of the opium market would be a source of considerable wealth.

NAME OF PARENT SUBSTANCES OF DERIVATIVE NOT REQUIRED ON LABEL. — Druggists and manufacturers under the pure food law are not required to name the parent substances of a derivative when they state on the label the name and quantity of the derivative, according to the decision of Chief Justice Clabaugh in the Supreme Court of the District of Columbia. The Court held that the secretaries of Agriculture, Treasury and Commerce and Labor, upon whom the law imposed the duty of making regulations to carry out the act, exceeded their authority when they attempted to require the manufacturing druggists to add to the name of the derivative the fact that it is derived from a parent drug, such as alcohol, cocaine, acetanilid, etc. Such action the court determined to be legislation and not regulation.

TWO NEOPLASTIC LOVERS. — The following item, sent us by a correspondent, revives memories of an ancient medical witticism, whose unfamiliarity to a modern generation of young physicians may perhaps justify its repetition:

"James Payn, the novelist, was editor of the *Cornhill Magazine*, London. Next door to his office a medical journal had its sanctum. One day Mr. Payn's door was cautiously opened. 'I have brought a little thing about sarcoma and carcinoma,' said the visitor. 'Very sorry, sir,' said Payn, politely, 'but we have all the poetry we want.' 'This isn't poetry!' exclaimed the visitor. 'It is an essay on two varieties of tumor.' 'Oh, I beg your pardon,' said Payn. 'I thought they were a pair of Italian lovers.' The visitor was a well-known medical professor who had entered the wrong office."

Probably the stories of Paul and Virginia, or Gracieuse and Percinet, were too fresh in the editor's recollection to make him desire more of the same.

## BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON.— For the week ending at noon, Nov. 16, 1910, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 41, scarlatina 28, typhoid fever 9, measles 20, smallpox 0, tuberculosis 67.

The death-rate of the reported deaths for the week ending Nov. 16, 1910, was 16.56.

BOSTON MORTALITY STATISTICS.—The total number of deaths reported to the Board of Health for the week ending Saturday, noon, Nov. 12, 1910, was 181, against 173 the corresponding week of last year, showing an increase of 8 deaths, and making the death-rate for the week, 14.01. Of this number 97 were males and 84 were females; 177 were white and 4 colored; 114 were born in the United States, 65 in foreign countries and 2 unknown; 44 were of American parentage, 115 of foreign parentage and 22 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 51 cases and 2 deaths; scarlatina, 39 cases and 1 death; typhoid fever, 19 cases and 3 deaths; measles, 16 cases and 0 deaths; tuberculosis, 51

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cases and 20 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 30, whooping cough 1, heart disease 28, bronchitis 5. There were 10 deaths from violent causes. The number of children who died under one year was 24; the number under five years, 38. The number of persons who died over sixty years of age was 64. The deaths in public institutions were 56. Cerebrospinal meningitis, 1 case. Anterior poliomyelitis, 1 case.

Of the above infectious diseases the following were non-residents: Consumption, 2 cases and 1 death. Typhoid fever, 1 case and 1 death. Scarlet fever, 6 cases. Diphtheria, 4 cases and 1 death.

Deducting deaths of non-residents, the total is 172 and the death-rate is then 13.31.

Reappointed Medical Examiner. — Orland J. Brown, M.D., of North Adams, Mass., has just been reappointed by Governor Draper, Medical Examiner for Berkshire County. The appointment is for a period of seven years, and this is Dr. Brown's fifth consecutive term of service.

An American Elected to Berlin Academy of Science. — Report from Germany announces that William Morris Davis, professor of geology in Harvard College, has recently been elected a member of the Berlin Academy of Science.

Penalty for Practising without Registration. — In the municipal court last week Jeremiah Scopa, of East Boston, was fined $100 for practising medicine without being registered under the laws of the Commonwealth of Massachusetts. He was subsequently held in $1,000 bail for the grand jury on a charge of perjury.

Successful Candidates for Registration in Dentistry. — Of 81 candidates who took the examinations in October last before the Massachusetts State Board of Registration in Dentistry, 25 passed and are now entitled to practise their profession in this Commonwealth.

Hospital Concerts for December. — It is announced that during the month of December the concerts of the Hospital Music Fund will be given as follows: On Dec. 4, at the Channing Home, Brookline; on Dec. 11, at the New England Hospital for Women and Children, Roxbury; on Dec. 18, at the Cambridge Hospital; and on Dec. 25, at the Massachusetts Homœopathic Hospital, Boston.

Proceeds of Several Fairs. — At the fair held in Boston last week by the Board of Directors of the Blind Babies' Aid Society, several thousand dollars were realized for the benefit of the Boston Nursery for Blind Babies. At a fair held three weeks ago in Boston, the sum of $1,100 was raised for the Woman's Charity Club Hospital. The Nurses' Club of Boston had a sale last week, the proceeds of which are to be devoted to furnishing the rooms of the club.

Some Recent Bequests to Hospitals. — Among numerous bequests to public charitable institutions, in the will of the late Anna Healy, filed for probate in Boston last week, were legacies of $5,000 to the Carney Hospital and $2,000 to the Free Home for Consumptives.

The will of the late Mrs. Daniel Dempsey, of Woonsocket, R. I., filed for probate in that city on Nov. 14, makes a bequest of $5,000 for the maintenance of a free bed in St. Joseph's Hospital at Providence, R. I.

Meeting of the Milk and Baby Hygiene Association. — At the annual meeting of the Milk and Baby Hygiene Association of Boston, held last week, Dr. Arthur A. Howard was elected medical director for the ensuing year. The report of the director, Mr. Kruesi, emphasized the part taken by the Association in procuring the prohibition of the sale of "loose milk" in Boston, and in securing the establishment of scientific research into some of the problems of the milk feeding of infants. This report further recommended the presentation, advocacy and support by the Association of a bill before the Massachusetts State Legislature forbidding "the employment of women in industry for two weeks before and six weeks after childbirth." A similar measure has been operative in Switzerland since 1877.

Protest against Condemnation of Bob-Veal. — In the issue of the Journal for Nov. 3 we noted the recent condemnation by the Boston Board of Health of a shipment of bob-veal as unfit for food. At a meeting last week of the New England Live Stock Dealers' Association, the president was authorized to appoint a committee of five to confer with the Massachusetts State Board of Health, with the United States inspectors and with the cattle commissioner in regard to a repeal of the present law governing the sale of veal in this state.

Reunion of Jefferson Medical College Graduates. — At a reunion of New England graduates of the Jefferson Medical College, held in Boston last week, addresses were made by

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Walter A. Ballantyne on "Sanitary Problems of To-Day," and by Dr. Alfred Worcester, of Waltham, Mass., on the invaluable service done by nurses in the campaign against tuberculosis. Among the other speakers were Dr. John C. Berry, of Worcester, Mass., and Dr. John E. Donley, of Providence, R. I.

A Reminiscence of Dr. Lange's Visit. — In an address before the annual meeting of the Board of Directors of the New England Peabody Home for Crippled Children, held in Boston last week, Dr. Robert W. Lovett spoke of the praise accorded to the work of this institution by Dr. Fritz Lange, of Münich, at the time of the latter's visit to this country last spring. In the issue of the Journal for April 7, 1910, we commented editorially on Dr. Lange's distinguished position as "one of the leading authorities in Germany on orthopedics." His commendation is gratifying and complimentary not only to the institution in question, but to American orthopedic surgery.

Proposed Commission on Public Health. — There has recently been filed with the clerk of the Massachusetts House of Representatives, for introduction at the next session of the State Legislature, a bill providing for the abolition of the present State Board of Health and the establishment in its stead of a salaried Commission on Public Health, to be composed of three persons appointed by the governor, who would devote their entire time to the work, and who, in addition to other duties, would be given "supervision of the inland waters and water-supply of the Commonwealth."

This proposed measure seems to represent the local resentment of a certain municipality (Lynn) against the present State Board of Health over the installation of a plant for the purification of water. As the legislator who proposes it has just failed of re-election by his constituency, the bill probably hardly needs serious consideration.

NEW YORK.

Home for Nurses, Jewish Hospital. — The new home for nurses of the Jewish Hospital, at Classon Avenue and Prospect Place, Brooklyn, was dedicated on Nov. 6 with appropriate ceremonies. The building cost $100,000, and is very thoroughly equipped.

Arrests for Motor Car Smoke. — Health Commissioner Lederle announces that since Sept. 29, when the active enforcement of the ordinance was first put into effect, 365 arrests have been made for violations of the Sanitary Code forbidding the escape of dense volumes of smoke from the exhaust pipes of motor cars; that 286 of the offenders have been fined; that 47 are under suspended sentences, and that but 32 have been discharged.

New York Milk Committee. — The New York Milk Committee will hold a conference for the purpose of discussing the most efficient ways of controlling the municipal milk supply in New York City, Dec. 2 and 3. There will be four sections: Milk Economics, Milk Supply and the Public Health, Milk Standards, and Milk Commissions. Physicians, sanitarians, research workers and representatives of the municipal, state and national health and agricultural departments will be present. The meetings will be thrown open to the public, and the medical profession is cordially invited to attend and to participate in the discussions.

Capture of Thieves through Finger Prints. — Two thieves have been cleverly captured, through their finger prints, by the detective force of the city. On the afternoon of election day, Nov. 8, a residence on West Tenth Street was entered and a number of articles stolen from it. It was found that finger markings on the glass face of a clock in the house corresponded with the finger prints on file with the police as belonging to two men whose photographs were in the Rogues' Gallery. The two were on a list kept of known thieves who make a business of visiting houses whose owners are away, and this knowledge eventually led to the capture of these thieves.

Cholera on an Incoming Steamship. — On the steamship *San Giorgio*, which arrived on Nov. 16 from Naples and Palermo, it was found that two persons in the steerage, a mother and her child of two years, had died and been buried at sea. While their deaths were described as due to gastro-enteritis, Health Officer Doty, after a preliminary bacterial examination of post-mortem evidence, became convinced that one if not both had died of cholera. There were also nine cases of illness in the ship's hospital, and these were taken to the Quarantine Hospital on Swinburne Island, while all the other steerage passengers were transferred to Hoffman Island for observation.

Scarcity of Water. — Notwithstanding some recent rains, there is still great scarcity of water in Westchester County, and, under authority

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granted by Mayor Gaynor and Water Commissioner Thompson, of New York, the Water Bureau of Yonkers began, on Nov. 16, the work of tapping the Croton Aqueduct at Ardsley, where the aqueduct runs parallel to the Sawmill River. For the present, a supply of between 3,000,000 and 4,000,000 gallons will be required from New York, and for this the city of Yonkers will have to pay about $500 a day.

Against Public Drinking Cups. — The State Health Department is co-operating with the railroads in endeavoring to do away with the public drinking-cup on trains and in stations, and in a recent circular states that there is no excuse for such on the train, or anywhere else, now that penny-in-the-slot machines serve out paper cups, and that metal collapsible cups can be purchased for a dime. The circular also warns the public against the use of the common towel, which at times may prove even more dangerous than the common cup, as the friction accompanying the use of the towel can easily rub disease germs from one face or hand into the eyes or a scratch in the skin of another person.

Profit Still in the Drug Business. — There would seem to be some profit still in the drug business. It is announced that the corner store at Thirty-fourth Street of the new Greely Square Hotel, which is to occupy the entire easterly side of Broadway between Thirty-third and Thirty-fourth streets, has been leased from the plans to the United Drug Company of Boston for a term of twenty-one years at the enormous rate of $110,000 a year. The store will contain about 5,500 square feet, so that the renting value averages $2 per square foot. This is said to be virtually double the price that has been asked for high-class ground floor stores in the choicest retail districts of Thirty-fourth Street and Fifth Avenue.

Endowment Fund, American National Red Cross Society. — President Taft having appointed committees in all the important cities of the country for the purpose of raising an endowment fund for the American National Red Cross Society, designed to represent a contribution of ten cents from each individual of the population, the New York committee has been very successful in securing a large amount in a short space of time. The subscriptions already aggregate $329,500, and those of $25,000 or over are the following: Mrs. E. H. Harriman and Mrs. Russell Sage, each $50,000; D. O. Mills (bequest), Jacob H. Schiff, Cleveland H. Dodge and Arthur C. James, each $25,000. The committee consists of H. P. Davison (chairman), Robert Bacon, Charles Hallam Keep and Lloyd C. Griscom.

Care of Tuberculous Patients. — At a meeting of the subcommittee on charities of the Commission on Congestion of the Population in New York, held on Nov. 15, M. J. Borden, secretary to Commissioner Drummond, of the Department of Public Charities, declared that the facilities for caring for tuberculosis patients in the city are entirely inadequate. "The daily population of our public hospitals and institutions," he said, "is about 10,000. The waiting list for admission to the tuberculosis pavilions is over 500. In 1902 there were only about 100 patients in these pavilions, but to-day they number over 800, crowded into space suitable for only about 500, and there are more than 30,000 people in the city suffering from tuberculosis. As long as the present tenement-house conditions continue, the city will be compelled to spend increasing amounts of money each year for the care of tuberculosis patients."

Mayor Gaynor and St. Mary's Hospital, Hoboken. — At a meeting of prominent men held on Nov. 11, a movement was started to raise a fund, by voluntary subscriptions from citizens of New York, to be presented to the sisters of St. Mary's Hospital, in Hoboken, as a Thanksgiving offering. The testimonial is to be given as a token of the gratitude and appreciation of the citizens for the sisters' great kindness to Mayor Gaynor and careful solicitude for his welfare when he was confined in the hospital after he was shot by James Gallagher. At the meeting a committee was appointed to take charge of this work, of which John D. Crimmins is chairman and A. Barton Hepburn, president of the Chamber of Commerce, treasurer. St. Mary's receives 4,000 patients annually, the great majority of whom are treated gratuitously, and there are at present over 300 patients in the hospital. Its work is much hampered and restricted by reason of the lack of necessary funds. The old building is in such poor condition that all but one floor is about to be vacated, and on the new addition to the hospital there is a debt amounting to nearly $150,000. No charge whatever was made for service in the case of Mayor Gaynor, but on leaving he presented the Mother Superior with a check, the amount of which has never become known.

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# Current Literature.

MEDICAL RECORD.

Nov. 12, 1910.

1. MAHER, S. J. *The Relation of the Acid-Fast Tubercle Bacillus to Other Forms of Bacterial Life.*
2. *LOURIA, L. *The Diagnostic and Therapeutic Value of Lumbar Puncture.*
3. KNAPP, M. I. *Insufficientia Pylori.*
4. *RICHARDS, W. M. *Some Peculiar Results of Eyestrain.*
5. GROSS, M., VON OEFELE, F., and ROSENBERG, B. S. *Technic of Examination of the Duodenal Contents.*
6. LYDSTON, G. F. *A Case of Death under Gas and Oxygen Anesthesia.*

2. Louria writes an exhaustive paper on the value of lumbar puncture in diagnosis and treatment. Outside of its use in meningitis, this procedure has an important place in therapeutics as a means of relief for the meningismus of acute infections, the cerebral manifestations of uremia and the headaches of chlorosis; also in eclampsia, traumatic myelitis, concussion of the brain and meningeal syphilis.

4. Richards reports some peculiar results of eyestrain. He has been able to relieve a surprising variety of disorders — somnolence, insomnia, post-nasal catarrh, hoarseness, asthma, indigestion — by the correction of refractive errors. [L. D. C.]

NEW YORK MEDICAL JOURNAL.

Nov. 12, 1910.

1. BIERHOFF, F. *Concerning the Sources of Infection in Cases of Venereal Diseases in the City of New York.*
2. BUTLER, G. F. *Gross Drugs* vs. *Active Principles.*
3. GROAT, W. A. *The Serum Diagnosis of Syphilis, using the Noguchi System.*
4. *FORDYCE, J. A. *Further Observations on the Use of the Ehrlich-Hata Preparation "606" in the Treatment of Syphilis.*
5. SKINNER, E. H. *The X-Ray and the Special Senses.*
6. BOGGS, R. H. *The Röntgen Treatment of Carcinoma of the Breast.*
7. RANDLE, W. H. *Prophylaxis of Enterocolitis.*
8. STRUNSKY, M. *What shall we do to Prevent Lateral Curvature of the Spine?*
9. WOLBARST, A. L. *Ehrlich's Arsenobenzol: Its Technic and Indications for General Use.*
10. PICOTTE, W. S. *Accidental Detachment of the Normally Implanted Placenta.*

4. Fordyce reports thirty cases of syphilis in which he has used Ehrlich's amido-arseno-benzol. He is impressed with the remarkable action of the drug in early cases and in cases resistant to mercury and iodide. The preparation and mode of administration are very important factors in successful treatment. The order of effectiveness is as follows: (1) Intravenous injection of a very dilute alkaline solution; (2) intramuscular injection of an alkaline solution; (3) acid solution; (4) neutral emulsion (intramuscular or subcutaneous). Primary lesions should be treated as early as possible; as an aid to complete sterilization, energetic local treatment should be employed — excision, cauterization or other means of destruction. In disease of the central nervous system the dose must be small (0.2 to 0.4 gm.). [L. D. C.]

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

Nov. 12, 1910.

1. PORTER, M. F. *Kidney and Ureteral Stones.*
2. *HATCHER, R., AND BAILEY, H. C. *Clinical Use of Strophanthus.*
3. EDSALL, D. L. *The Work of the Council on Pharmacy and Chemistry.*
4. LOEB, H. W. *Acute Nephritis following Acute Tonsillitis.*
5. *STONE, W. J. *The Treatment of Typhoid Bacillus Carriers.*
6. BEEBE, S. P. *Artificial Immunization in Non-Bacterial Diseases.*
7. IRONS, E. E. *Points in the Application of Vaccine Therapy.*
8. *ROSENOW, E. C. *Autogenous Vaccine Therapy in Endocarditis.*
9. LEOPOLD, J. S., AND ROSENSTEIN, T. *Significance of Tuberculides in Diagnosis of Tuberculosis in Infancy.*
10. HOSKINS, R. G. *Thyroid Secretion as a Factor in Adrenal Activity.*
11. CROOK, J. L. *Suspended Respiration during Operation.*
12. ADLER, H. *Diagnosis of Ulcer of the Stomach and Duodenum by the Roentgen Ray.*

2. Hatcher and Bailey, from experimental and clinical observation with the various digitalis products, state that the intravenous injection of crystalline onabain affords the most exact dosage possible in digitalis therapy and the most rapid effect. The effect of any digitalis body on the cardiac action is more prompt after intravenous injection than in any other way.

5. Stone claims that typhoid carriers, injected within a comparatively short time after their infection, probably receive more benefit from properly prepared autogenous vaccine than from any other known form of treatment.

"Contact carriers," who never to their knowledge have had typhoid, are more susceptible to inoculation than carriers who have had a definite attack of the disease. When the infection has persisted for years it may be difficult to clear up the condition by bacterial inoculations.

8. Rosenow states that evidence points strongly to the fact that injections of dead bacteria in acute endocarditis are of very small therapeutic value and may be actually harmful. [E. H. R.]

THE LANCET.

Oct. 22, 1910.

1. DONKIN, H. B. *The Harveian Oration on Some Aspects of Heredity in Relation to Mind.*
2. DURNFORD, J. *Remarks on the Royal Navy Medical Service.*
3. *MCDONAGH, J. E. R. *Further Experiences with "606" (Eighty Cases).*
4. LETT, H., AND TURNBULL, H. M. *A Case of Benign Cyst of the Humerus.*
5. BILLARD, G. *Anaphylaxia in Hay Fever, Nettle Rash and Asthma.*
6. WOOD, J. W. *Three Cases of Thrombosis of the Lateral Sinus.*
7. HEWLETT, R. T. *The Treatment of Cholera Asiatica with an Anti-endotoxic Serum.*
8. HARDING, H. W. *The Action of Chlorine upon Water Containing the Cholera Vibrio.*

3. McDonagh has found much larger doses of "606" needed to cure an early chancre than to cure an extensive gummatous ulceration, and concludes that the cure, therefore, is largely due to the amount of antitoxin formed. If a mother after giving birth to a syphilitic infant be treated with "606" while nursing the child, the child's symptoms quickly disappear, although no arsenic is present in the breast milk; therefore it must be due to the antitoxins formed by the death of spirochetes in the mother. He uses a nearly neutral solution of about 6 ccm. and injects between the scapula and the spine. There is occasional difficulty in breathing, owing to spasm of the chest muscles after this injection; this, however, soon passes off. As a prophylactic the drug is powerless, but in no primary stage treated with "606" did any secondary symptom develop. In the second stage, symptoms generally disappear after a single injection of 0.5 to 0.6 gr. Three cases of tabes with marked ataxia did not improve, and in general in the parasyphilitic affections, "606" is rarely, though occasionally, of use. [J. B. H.]

Oct. 29, 1910.

1. DELÉPINE, S. *An Address on the Chief Aim of Medicine.*
2. DUCKWORTH, D. *A Clinical Lecture on Hematemesis.*
3. BARKER, A. E. *A Case of Acute Pancreatitis; Operation; Recovery.*
4. MEEK, W. B. *Phagocytosis of Erythrocytes by Endothelial Cells: Some Points in Connection with it, and a Method for Its Demonstration.*
5. TELFORD, E. D. *Some Notes on "Delayed Chloroform Poisoning."*

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6. Edgecombe, W. *A Case of Poisoning by Aconite.*
7. Guthrie, T. *A Method of Removing Nasopharyngeal Fibromata, with Two Illustrative Cases.*
8. Paterson, P. *The Treatment of Ascites by Drainage into the Subcutaneous Tissues of the Abdomen.*
9. Morrell, R. A. *Preliminary Observations on Some Cases of Esophoria not caused by Refractive Errors.*
10. Parry, L. A. *Two Cases of Malignant Pustule.*
11. Wechselmann, W. *The Treatment of Syphilis with Ehrlich's Dioxydiamido-arsenobenzol.*

8. Paterson describes a method of draining ascites, due to malignant disease or cirrhosis, from the peritoneal cavity into the subcutaneous tissues of the abdomen. The technic of placing the glass button so as to carry on this drainage is simple. At first a fluctuant tumor is formed, but as absorption becomes established into the superficial vessels, this soon passes off. After twenty-four hours little or no discomfort is felt by the patient. [J. B. H.]

British Medical Journal.

Oct. 22, 1910.

1. Miers, H. A. *An Address on Scientific Observation.*
2. Stewart, P. *An Address on Certain Intracranial Diseases Associated with Nasal, Aural and Laryngeal Symptoms.*

THE BRITISH MEDICAL ASSOCIATION.

*Section on Gynecology and Obstetrics.*

3. Herman, G. E., *et al. Discussion on the Causes and Treatment of Dysmenorrhea.*
4. Young, J. *The Structure of the Stroma of the Endometrium and Its Bearing on the Menstrual Changes.*
5. Tate, W. W. H., *et al. Discussion on Treatment of Fibroids Complicating Pregnancy.*
6. Döderlein. *The Origin and Prevention of Puerperal Fever.*
7. Kerr, J. M. M. *Additional Cases of Rupture of the Uterus.*
8. *Campbell, J. *An Embolism during Labor.*
9. Wallace, A. J. *Intraperitoneal Hemorrhage in Cases of Uterine Myomata.*
10. Ivens, F. *Localized Necrosis of an Adenomyomatous Right Tube, with a Left Tubal Mole and Fibroid Uterus.*
11. Gottschalk, S. *Cases of Intestinal Obstruction due to the Uterus.*
12. *v. Herff, O. *The Causal Treatment of Dystocia in Cases of Pelvic Contraction.*
13. Lockyer, C. *Fibroid Tumors of the Uterus as a Complication of Pregnancy.*
14. Nagel, W. *Papillary Ovarian Cysts: Should Both Ovaries be Removed?*
15. Longridge, C. N. *Involution of the Uterus.*
16. McIlroy, A. L. *The Surgical Treatment of Fibrosis of the Uterus.*
17. Gottschalk, S. *Erosion of the Cervix.*
18. Döderlein. *Extraperitoneal Cæsarian Section and Hebosteotomy.*

*Section of Psychological Medicine and Neurology.*

19. Hyslop, T. B. *Introductory Remarks by the President.*
20. *Savage, G. H., *et al. Discussion on Insanity and Marriage.*
21. Baugh, L. D. *Paranoidal Symptoms at the Female Climacteric.*
22. Bárány. *The Vestibular Apparatus and the Cerebellum.*
23. Thomson, D. G. *On the Teaching of Psychiatry.*
24. Russell, J. S. R., *et al. Discussion on the Treatment of Tabes Dorsalis.*
25. Ash, E. *On the Psychological Treatment of Certain Functional Conditions.*
26. Jolly, W. A. *The Knee-Jerk and Simple Reflexes.*
27. Bruce, A. *Demonstration on Sclerosis of the Adventitia.*

8. Although the causes of air embolism during labor are numerous, the most common one is the delivery of the patient under anesthesia in the left semi-prone position and failure to turn her over on her back as soon as the child's head is born. The left position tends to allow an inrush of air into the uterine cavity, which does not occur if the patient is on her back. Prophylaxis simply consists in placing the patient on her back. The symptoms, if not at once fatal, resemble those of embolism from a clot — spasmodic inspiratory attempts, convulsions, cyanosis, increased pulse, only they soon disappear, only to reappear again in a short while in worse degree than before. When such embolism has occurred, the placenta should at once be removed and the uterus washed out. Saline infusions, strychnine, digitalis and oxygen should be administered. Rest in bed for five to six weeks should be insisted on. The writer cites two interesting cases in detail.

12. Herff strongly recommends treating such degrees of contracted pelvis as will allow of it by means of induced premature labor. Especially if the life of the mother is more valued than that of the child is this operation desirable, as the mortality in the mother is practically zero, the after-effects almost none and the danger to the child only slightly greater than that other method which he advises, Cæsarean section.

20. Savage, Shuttleworth, Jones, Russell, *et al.*, discuss briefly the question of marriage and various mental disorders and degrees of insanity. Savage emphasizes the fact that in no case should marriage be allowed as a means or a hope of cure, especially in cases of so-called moral perversion, alcoholics, etc. [J. B. H.]

Oct. 29, 1910.

1. *Keith, A. *Remarks on Diaphragmatic Herniæ.*
2. *Armstrong, G. E. *Typhoid Perforations and Perforations of the Gall Bladder.*
3. Dick, J. S. *Bacillus Coli Infections with Special Reference to Their Recognition and Comparative Frequency.*
4. Collum, R. W. *On the Diet of a Patient before Operations under General Anesthesia.*
5. Hird, R. B. *Ophthalmic School Clinics in the Country.*
6. Faulder, T. J. *Submucous Resection of the Septum Nasi.*
7. Shaw, W. F. *Three Bad Prognostic Signs in Eclampsia.*

*Section on Ophthalmology.*

8. Higgens, C. *Introductory Remarks by the President.*
9. Berry, G. A., *et al. Discussion on the Future of Ocular Therapeutics.*
10. Harman, N. B. *The Use of Carbon Dioxide Snow in Eye Work.*
11. Pisani, L. J. *On the Conditions which may account for the Greater Prevalence of Cataract in India.*
12. Russell, J. S. R., *et al. Discussion on the Diagnostic Values of Ophthalmoplegia, Partial and Total.*
13. Harman, N. B. *The Education of High Myopes.*
14. Thompson, A. H. *The Operative Treatment of High Myopia.*
15. Benson, A. H. *A Plea for the More Extended Use of Buccal Mucous Membrane in Enlarging Certain Forms of Contracted Socket.*
16. Spicer, W. T. H., *et al. Discussion on the More Chronic Forms of Anterior Uveitis.*
17. Fink, G. H. *Drainage after Cataract Operations.*
18. Harman, N. B. *School Clinics.*

*Section on Physiology.*

19. Thompson, W. H. *Introductory Remarks by the President.*
20. Schäfer, E. A., *et al. Discussion on the Factors that make for an Efficient Circulation.*
21. Melville, Colonel, *et al. Discussion on Food Requirements for Sustenance and Work.*
22. Krogh, A. *Demonstration on Tonometric Determination of Dissolved Gases.*
23. Krogh, A. *The Forces governing the Gas Exchange in the Lungs.*
24. Taylor, M. R. *The Excretion of Creatine in Diabetes.*

1. Keith gives an interesting study of diaphragmatic hernia. In his series the proportion of congenital to acquired cases is 26:8. He describes the various forms and the anatomy of such herniæ.

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2. Armstrong discusses typhoid perforation as it has occurred at the Montreal General Hospital. Out of 2,051 cases of typhoid, from 1897 to 1910, there were 93 cases, 4.5%, of perforation. The author has studied 97 cases of perforation; 78 were operated on, with 24 recoveries, a percentage of 30.7%. During the past year, owing to earlier diagnosis and operation, in 19 operations 9 recovered, a percentage of 47.3%. In 50 out of 93 cases, the perforation occurred in very severe types of fever, while in 6 cases it was in the ambulatory type. He believes in using local anesthesia whenever possible. [J. B. H.]

DEUTSCHE MEDIZINISCHE WOCHENSCHRIFT. No. 42.

OCT. 20, 1910.

1. ORTH, J. *Rudolf Virchow and Bacteriology.*
2. KRAUS, F. *Diagnosis of Functional Heart Disease.*
3. *HERZOG, H. *The Nature of Trachoma Bodies.*
4. MÜHLENS, P. *Native Quartan Malaria.*
5. *KNIERIM, H. *A Rare Localization of Lead Sulphide in Chronic Lead Poisoning.*
6. POLLNOW, L. *Transitory Amaurosis.*
7. HAUSMANN, T. *Movable Cecum and Appendix, with Remarks on Palpation of the Appendix.*
8. POTTENGER, F. M. *Muscular Rigidity and Its Importance as a Sign of Apical Pulmonary Tuberculosis.*
9. *Investigation of the Infectiousness of Bovine Tubercle Bacilli.*

3. Herzog has continued his studies with trachoma bodies and has now reached the conclusion that these bodies are involution forms of bacteria and in all probability the gonococcus. In old specimens of gonococci he has been able to produce the same picture in regard to morphology and staining reaction.

5. Knierim includes in his article the reports of other authors who have observed an abnormal position of the lead line in cases of lead poisoning. In this case the evidence of deposits of lead sulphide was present on the mucous membranes of the lips in addition to the usual position on the gums near the teeth. [C. F., JR.]

MÜNCHENER MEDIZINISCHE WOCHENSCHRIFT. No. 38.

SEPT. 20, 1910.

1. *GRAFE, E. *Significance of Oil-Acids for the Diagnosis of Gastric Cancer.*
2. ANSCHERLIK, H. *On the Reported Results of the Use "Ehrlich's 606," and a Few Interesting Cases.*
3. SCHROEN, H. *Studies of Weichardt's Epiphany Reaction.*
4. KLAUSNER, E. *Drug Eruptions and Hypersusceptibility.*
5. SCHOTTMÜLLER, H. *Pachymeningitis Interna Infectiosa Acuta and Meningismus.*
6. KEHR, H. *Twenty Years of Gallstone Surgery: A Review of 1,600 Operations.*
7. *MELCHIOR, E. *Dangers of Forcibly Dilating the Anal Sphincter.*
8. *GOLDSCHMIDT, R. *Ascaris Poisoning.*
9. SCHAEFER. *Cog-Wheel Breathing.*
10. KELHING, G. *Indurated Ulcer of the Stomach.*
11. COLMANN, A. *Myoma and Glycosuria.*
12. LANGER, J. *Occurrence of Spirocheta Pallida in the Vaccine with Regard to Congenital Syphilis.*
13. REICHMANN, V. *A Case of Atypical Acute Myeloid Leukemia without Involvement of the Bone Marrow.*
14. WERNER, R. *Zykloform as a Local Anesthetic.*
15. STREMPEL. *A Case of Irreducible Luxation of the Fore-Finger.*
16. WILDT, A. *Use of Gilded Surgical Needles.*
17. HIRSCH, J. *Transportable Table for Examination or Operation.*

1. The writer advances the theory that the hemolytic substance which has been found in the gastric contents of patients having carcinoma of the stomach is a free fatty acid coming from the tumor itself. He has tested for hemolytic properties the contents obtained after an Ewald meal in a large number of cases of carcinoma, benign gastric disturbances and normal cases. The evidence seems to show that the hemolytic substance cannot come from the meal. Before testing the stomach was always washed clean so that food previously ingested did not interfere. Tests were also made for bile and intestinal ferments which have hemolytic properties. It was found that in cases of gastrectasis the test was unreliable, but when there was no regurgitation through the pylorus a positive result occurred in the great majority of cases of proven carcinoma and a negative result in most of the non-malignant conditions. (The fact that of thirteen doubtful cases only three reacted positively suggests that the test may be of less value in the early stage of carcinoma.)

7. Melchior calls attention to the danger of serious incontinence following forcible dilatation of the anal sphincter. He says that this can be entirely avoided by doing the work under complete anesthesia and by not using great force.

8. It is stated that persons working with ascaris worms in the fresh stage frequently suffer from poisoning in the form of conjunctivitis or swelling of the hands, and the writer believes that these are due to an emanation from the parasite. He thinks it probable that the symptoms observed in ascaritis are due to the same poison, but he does not give definite information as to its nature. [G. C. S.]

No. 39. SEPT. 27, 1910.

1. *SCHREIBER, E. *Intravenous Use of Ehrlich's "606."*
2. *HÜGEL, G., AND RUETE, A. *Our Experience to Date with the Ehrlich-Hata Arsenic Preparation "606."*
3. *SIESKIND, R. *Summary of 375 Cases Treated with Ehrlich-Hata Preparation.*
4. SELLER, J. *Clinical Effect of Ehrlich's Diamido-Arsenobenzol: "606."*
5. SEIDEL, H. *Permanent Biliary Fistula and Osteoporosis.*
6. KRECKE, A. *Treatment Before and After Laparotomy; Particularly Early Getting Up.*
7. FISCHER, L. *A Case of Dysbasia Angiosclerotica with Ischemia Followed by Hyperemia.*
8. GROS, O. *A Method of Increasing the Effectiveness of Local Anesthetics.*
9. LÄWEN, A. *Use of Novocaine as Local Anesthetic in a Solution of Sod. Bicarb. and Common Salt.*
10. WEIEL, E. *On Digipuratum (Knoll).*
11. MERZ-WEIGANDT, M. N. D. *A Lip Clamp.*
12. JOGICHESS, M. *Epidemiology of Poliomyelitis Acuta Anterior.*

1. Schreiber reports having injected 325 patients intravenously with "606." He has observed a rise of temperature within a few hours after the injection in a considerable number of them. It lasts as a rule only a short time. A few patients had nausea, vomiting or diarrhea and one had urticaria. No other ill-effects were noted, and in no case were the symptoms severe. It is the writer's impression that results were more prompt and surer by the intravenous than by other methods of injection and he, therefore, recommends it for syphilis of the central nervous system. He insists on small dosage when the drug is used intravenously.

2. The writers report on 30 cases of syphilis treated with "606." Ten of these received it intramuscularly and 20 subcutaneously. They are in favor of the subcutaneous method on the ground that absorption is better and quicker, that infiltration occurs less often and that the slight pain it causes is more easily borne in the back than in the buttock.

3. This article contains so much of value that a complete summary cannot be given here. Three hundred and seventy-five cases of syphilis of all sorts and stages were treated with "606." Of these, 44 were followed for five months, and 8 of them had recurrence. The following indications are given for the use of "606": Malignant syphilis; syphilis in any stage when mercury is not well borne; cases of recurrence after repeated mercurial treatment; cases of syphilis in the early incubation period (when possible also excision of the chancre or destruction of it by the Holländer hot-air method); tuberculous syphilis; visceral syphilis; decrepit patients; latent syphilis when the Wassermann reaction persists; and parasyphilitic affections in the very early stage.

Contra-indications: Severe non-syphilitic retinal or optic nerve diseases; severe organic disease of heart or vessels; severe pulmonary disease except tuberculosis;

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advanced degeneration of the central nervous system; and, temporarily, cases of angina or febrile diseases. The latter can be injected after the acute illness has passed. Remarkable results were obtained in malignant syphilis. [G. C. S.]

No. 40. Oct. 4, 1910.

1. *Faulhaber. *Röntgen Diagnosis of Deep Ulcus Ventriculi.*
2. *Grosser, P., and Betke, R. *Mors Subita Infantum and the Parathyroid Glands.*
3. *Greven, K. *Beginning and Duration of the Excretion of Arsenic in the Urine after Use of Dioxydiamidoarsenobenzol.*
4. Favento. *On One Hundred and Fifty-six Cases Treated with the Ehrlich-Hata "606."*
5. Gioseffi, M. *Progressive Pernicious Anemia.*
6. *Lattes, L. *The Influence of Fat in the Blood on the Poisonous Effect of Chloroform.*
7. Janney, N. *Studies of a Few Commercial Diabetic Breads.*
8. Jacobaeus, H. C. *The Possibility of Cystoscopic Examination of the Serous Cavities.*
9. Hahlweg. *Treatment of Coli Pyelitis by Washing the Pelvis of the Kidney.*
10. Hamburger, F. *Treatment of Phimosis in Early Childhood.*
11. Spiess, G. *A Case of Severe Dyspnea due to a Polyp in the Right Bronchus.*
12. Hartmann. *Supervision of Infants.*

1. The writer has been successful in diagnosing ulcer of the stomach by means of the x-ray. He gives diagrams and reports a few cases. His conclusions are similar to those of Haudek, whose work he seems not to have seen. (Ref.: Münch. Med. Woch., July 26, 1910.) The method is chiefly of use for deep ulcers situated on the greater or lesser curvature, because it depends upon the shadow thrown laterally by the bismuth in the ulcer. He says that when an abnormal spot of bismuth (which he describes in detail) can be seen projecting from the stomach, and that when in addition an hour-glass constriction can be seen in the same region, then the diagnosis of a deep ulcer can be made with certainty and its position can be stated.

2. Grosser reports three cases of sudden death in infants, in all of which hemorrhages were found in the parathyroid glands. He believes that destruction of these glands by hemorrhage was the cause of death, and he urges that in all similar cases the parathyroid glands should be carefully studied.

3. Greven says that when mercurial treatment is combined with the use of "606" the excretion of arsenic in the urine seems to be delayed, and that when iodide of potash is given, excretion of arsenic is apparently delayed.

6. Lattes reaches the conclusion that an increase of the fat in the blood, contrary to Reichers, diminishes the quantity of chloroform necessary for narcosis, and that this results because the fat-tissue of the body takes up much less chloroform. [G. C. S.]

Berliner Klinische Wochenschrift. No. 43.

Oct. 24, 1910.

THE SEMI-CENTENNIAL OF THE BERLIN MEDICAL SOCIETY.

1. Fränkel, B. *Latest Statistics concerning the Campaign against Tuberculosis.*
2. Landau, L. *Changes and Progress in the Treatment of Chronic, Inflammatory and Suppurative Diseases of the Uterine Appendages.*
3. v. Hansemann, D. *The Berlin Medical Society and Pathological Anatomy.*
4. Fraenkel, A. *Interstitial Emphysema of the Lungs, with More Especial Regard to Mediastinal and Subpleural Emphysema.*
5. *Fürbinger. *Estimation of the Conditions of the Spermatozoa in the Diagnosis of Male Sterility.*
6. Jochmann, G. *Accidents in Serum Therapy.*
7. Zangemeister, W. *Antistreptococcus Serum and Streptococcus Immunity.*
8. Gerhartz, H. *Examinations concerning the Erect Position.*
9. Lesser, F. *Critical Remarks concerning the Action and Methods of Application of Preparation "606."*
10. Schlesinger, E. *The Primary Form of the Normal and Pathological Stomach and Its Beginning.*
11. Alexander, A. *The Indications and the Technic of X-Ray Treatment of Diseases of the Skin.*
12. Gillet. *Technical Novelties.*

5. The author goes into the different pathological conditions to which the semen is disposed. He emphasizes the importance of using fresh material uncontaminated. He also shows that it is not an easy thing to make a positive diagnosis of male sterility. He considers that the male is the responsible factor in very many cases of sterilitas matrimonii, but emphasizes the fact that an examination should be made by a specialist before the patient accepts the diagnosis of male sterility as final, and even then a gynecologist should make certain that all is normal with the wife. [J. L. H.]

Annales de l'Institut Pasteur.

Sept. 25, 1910.

1. *Nicolle, C., and Mauceaux, L. *Researches on Oriental Pustule; Cultures, Reproduction and Immunization.*
2. Heckenroth, F. *Attempt to Obtain a Species of Nagana Resistant at the Start to the Emetic.*
3. Shoukévitch, J. *Experiments upon the Immunity of Rabbits against the Bacillus Suipesticus.*
4. Rosemblatt, M., M. and Mme. *Effect of Concentration in Saccharose upon the Paralyzing Action of Certain Acids in Alcoholic Fermentation.*

1. Nicolle and Mauceaux have made an exhaustive study of oriental pustule. They find that the causative agent is the Leishmania tropica, which they have been able to reproduce on artificial media, and which is similar to the protozoa of kala azar. The cultures grow best at 22° C. and will live at this temperature for two months. Transplantations are best made on the tenth to fifteenth day. The virus of the oriental pustule is pathogenic for man, monkey and dog. Successful inoculation experiments have been carried on. They describe in brief the characteristics of the lesions, but have put aside their histologic study for another special work.

This virus is inactive in the horse, cat, sheep, white rat, goat and donkey. Also, it is inactive when given intraperitoneally in a variety of animals. The point for favorable inoculation is on the nose and eyebrows especially. An immunity against a second inoculation is obtained provided that the first attack has entirely healed. During the first attack further infection may occur. There is probably a negative phase of hypersensibility. Kala azar infection when cured offers an immunity against the pustule disease. The latter offers increased resistance but not immunity to kala azar. The dog is suspected of being the common carrier of this infection. [C. F., Jr.]

## Miscellany.

### CHOLERA IN VARIOUS LOCALITIES.

During the week ending Nov. 19, there was a moderate recrudescence of Asiatic cholera in Italy. Thirty-five new cases and 9 deaths of the disease were reported, as against 13 cases and 5 deaths the preceding week. A fresh outbreak of cholera is reported from Constantinople, where, on Nov. 17, there are said to have been 37 new cases and 18 deaths, and on Nov. 18, 49 new cases. The steamer, *San Giorgio*, which reached New York City on Nov. 16, from Naples and Palermo, was held at quarantine on account of the death of 2 passengers, during the voyage, with symptoms suggestive of cholera. Nine other passengers, all from the steerage, were

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found to be sick with similar symptoms, and were detained on suspicion for diagnosis. On Nov. 17, another suspected case of cholera was detained at Quebec, Canada, by order of the United States immigration physician stationed at that port. The patient, a Russian, who arrived at Quebec, on board the *Royal George*, from Bristol, England, was destined for Oronto, Wis. The vessel on which he sailed has been quarantined. It is gratifying to observe such evidences of the vigilance and zeal with which the extensive frontiers of our country are guarded by United States officials against invasion by this disease.

## DESIRABILITY OF A STATE PSYCHOPATHIC HOSPITAL.

THE desirability of establishing a state psychopatic hospital or sanatorium for the observation and study, during temporary detention, of borderline psychoses and of patients in the incipient stages of mental alienation is still under consideration by a special commission, consisting John B. Tivnan, of Salem, chairman; Dr. William N. Bullard, of Boston, secretary; Dr. Burnham R. Benner, of Lowell; Hon. Edward S. Bradford, of Springfield; and Charles E. Ware, of Fitchburg. At a hearing in the State House last week before this commission, Dr. Henry R. Stedman, of Brookline, chairman of the board of trustees of the Taunton State Hospital, pointed out some of the disadvantages of such an institution, and its possibilities of conflict with the work of the Psychopathic Hospital for the Metropolitan District, soon to be completed. On the whole, however, he approved of the establishment of the proposed hospital, by the state, on a small scale and as an experiment. Other opinions, favorable and adverse to the project, were expressed by other physicians present at the hearing.

# Correspondence.

## PARIS LETTER.

### RECENT DEVELOPMENTS IN THE SYPHILIS QUESTION.

[*From Our Special Correspondent.*]

PARIS, Oct. 31, 1910.

*Mr. Editor:* The syphilis question has been making rapid strides of late. What with the discovery of the germ of the complaint, of the possibility of reproducing the disorder in animals, of the Wassermann reaction and of the apparently specific action of various forms of arsenic on the vitality of the germ, the study of this disease has advanced more during the last few years than during as many centuries previous to the finding of the spirochete pallida.

But all of these steps in advance do not stand on the same footing in the eyes of the public, at least over here. The germ, the transmission of the disorder to the higher apes, and the Wassermann reaction were looked on with eyes of indifference, — more or less as matters of scientific interest alone, concerning no one outside of the profession. A temporary ripple of excitement occurred when Brieux carried the subject on to the public stage in his well-known play that every one went to see, and coined his now-famous name for the disease, "avarie" (i. e., damage; adjective, damaged). This term filled a deeply-felt want. In spite of the liberty with which we treat all subjects here, both in conversation and press, the crude word syphilis stuck in people's throats, and few papers would have ventured to print it. But with this harmless little term "damaged, all barriers were removed, and Madame X. now tells Mlle. Y. in a public salon and in ordinary tones that Mr. Z. is *avarié*, without a moment's hesitation.

Another ripple of interest was created among the public when an enterprising physician, together with a well-known firm, succeeded in reproducing biological pictures of the spirochete pallida, together with numerous other germs, and gave cinematographic representations of the same to public audiences. I was present at one of these demonstrations, and I must confess that it was one of the emotions of my life to see these germs thrown on a screen, some of them *as large as a man's forearm*, and wriggling and squirming around among cells, blood corpuscles, intestinal detritus, etc., just as they act when placed fresh under a microscope. It was positively *overpowering;* and the feeling crept over me, in spite of myself, that it was a wonder any one of us was alive to tell the tale if such ferocious enemies as these were abroad in the land. There was one series of pictures of the blood of a patient with some rare tropical disease whose name escapes me, taken on successive days, and showing the progressive multiplications of the germs among the blood corpuscles until the latter were entirely swamped by the former and the blood was turned into a grovelling mass not unlike a heap of maggots, that was simply terrifying!

But these little ripples of interest were the merest bagatelles as compared with what has occurred since Ehrlich came forward with his 606. The other discoveries, if mentioned at all in the daily, political press, had at most the honors of three lines in fine print among the *faits divers*. But 606 was received with the honors of war and full regimentals, the editors feeling that here was a guest to whom too much courtesy could not be shown, as any one of them might have need of him when least expected. For we here transpose the common dictum about tuberculosis and say that every man either has been, is or will become *avarié*.

The result was that the daily press, *Matin* at the head, fell on the question like one man, and the front page and leading columns, in the widest and biggest type, have been freely used in disseminating news about Ehrlich and his famous 606 until really we are a bit sick of it. Furthermore, this campaign afforded an opportunity for more or less questionable efforts on the part of enterprising practitioners to keep or bring their physiognomies and merits before the public gaze. The irrepressible Doyen was the first to seize the chance, and opened fire in his usual place, the first column of the first page of the *Matin*, in an article more or less critical concerning Ehrlich and the new preparation, which I think he must now regret having written, since it amounts practically to the fact that his gun went off, to use Kipling's expression, "slightly prematoor." He also took the occasion to again call attention to the merits of his mycolysin, which somehow or other continues to be ignored, nor can I make out that, in the eighteen months or so since this remedy was put on the markets, the city death-rate among the infectious disorders (which the preparation was announced as destined to put an end to once and for all time) has shown any noticeable diminution.

Another confrère, Mouneyrat, also took advantage of the discussion to call public attention to a preparation of his called hectine, which he says is far preferable to 606 and has, he claims, been already tried in sixty thousand cases, — I say *sixty thousand!* I do not know this confrère, but it seems to me that for a preparation of which the general medical public has never heard to have been already tried on that number of patients without its fame being noised abroad strikes me as singular. The French have a very neat expression for emergencies like this: "*Cela n'est pas possible; ca se serait su!*" This series of *s*'s is delightful. However, I was both surprised and chagrined to see no less a personage than Bouchard take part, in an interview, in this discussion in the daily press, and refer to the merits of hectine; so I suppose there must be something in the story. But how Mouneyrat, in a short

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space of time, can have collected a series of cases of that magnitude passes my comprehension. Is everybody in the country in the active phase of syphilis? This claim of Mouneyrat has furthermore given rise to what appears to be rather an unpleasant incident. It seems that Ehrlich claims that Mouneyrat did not discover hectine at all, but got the idea from him himself during a visit to the Frankfurt laboratories. Hence, talk of lawsuits, patent infringements, etc. In short, a disagreeable affair.

Well, then, as I said, for the past three months, since early August, the daily papers have been filled with articles about Ehrlich, visits to his laboratory, interviews with this man and that man, the opinions of so-and-so of the Institut Pasteur, discussions before the Academy of Medicine, telegrams from Ehrlich denying things that were said before that learned body, — until the public mind has come to think of nothing else but syphilis, and even children in short clothes are treating their dolls with this 606, which they see at the head of articles in all the papers, for this mysterious disease which I suppose they look on as some kind of measles or whooping cough special for grown-ups.

The result of all this has been rather surprising and unexpected, and was described to me by the head of one of the laboratories here where they prepare the serums, remedies put up in bulb form, and other hypodermic preparations that are in such common use in Paris. He said that any number of old syphititics, whose disease had been quiescent for years so that they had practically forgotten all about it, had become uneasy on reading so much about syphilis in the papers; and that many of them had begun to treat themselves with hypodermics of soluble preparations of mercury, while the most advanced section, the up-to-daters, were applying to him in such numbers for a Wassermann test, to see whether their disease was in an aggressive or quiescent stage, that he had been obliged to create a special department for the Wassermann test and put a man at the head of it ($10 a test!). As to his sale of bulbs of mercury, it had quadrupled!

So much for the gossip on this subject, — now for more serious details.

The remedy was, I believe, first used clinically in March last. Since that time the question of the treatment of syphilis by 606 has been up before three or four German congresses, while the German medical press has teemed with articles on the subject. An amiable Frenchman, who signs J. D. in the *Presse Médicale*, has been kind enough to wade through and assimilate the more important portion of this dreary German prose, on behalf of his confrères, and has obligingly produced a digest of the subject in the number of Oct. 19. While referring those who wish for fuller data to the article itself, where they are exposed with the neatness and lucidity in which the good French writer excels, I will take the liberty of stealing a little of this man's thunder and send you the salient facts of the article.

Opinions are practically unanimous as to the efficacy of the drug, whose action appears to be little less than miraculous in certain cases, — curiously enough, the particularly grave ones. But the enthusiasm of the first hour has had time to calm down, and 606 is no longer looked on as the harmless preparation that was going to cure any case of syphilis in one single injection. Those who have had opportunity to use the remedy on a large scale, while admitting its really great qualities, say that we are still altogether in the experimental stage with this preparation, and that a great deal has yet to be learned about it. Furthermore, it has already given rise to some nasty accidents, and its effect on sight has been claimed by some to be similar to that of atoxyl, though this has been vigorously denied by Ehrlich. However this may be, it is certain that the German physicians in whose hands the remedy has been placed have been very cautions in having the patients' sight thoroughly tested before applying the treatment. That the remedy is still in its experimental stage is perhaps best shown by the fact that its users do not even agree yet as to dose and technic, each man apparently having a different way of preparing the substance for injection, whether hypodermic or intravenous. The latter method is painless, but in the early days the preparation used for hypodermic administration was extremely painful, preventing the patient from walking or assuming a seated position, and necessitating even in certain cases confinement to bed for a week. In this particular undoubted progress has been effected, as methods of dissolving the powder, which is very delicate and comes in little bottles in which a vacuum has been created, have been devised that permit of hip-injections being made without any pain whatever.

The dose to be given at a séance has also not yet been accurately determined. Ehrlich advises 0.45 to 0.50 for women; 0.50 to 0.60 for men. Alt, however, claims that it is preferable not to exceed the dose of 0.50, as above that figure the patient is exposed to accidents such as tachycardia, irregular heart action, syncope and nausea. Other experimenters, again, appear to have used larger doses, and 0.70 and 0.80 have been freely administered, — even as much as 1.20! Wechselmann, on the other hand, does not advise the single dose, but accords his preference to the small dose frequently repeated.

The most remarkable features of the result of the treatment by 606 in the primary and secondary stages are: First, its marvelous effect on the mucous patch, the infecting element *par excellence* of the disease; and, second, the fact that in a few days it does away with cervical leucodermia, a symptom which mercury does not affect in the slightest degree. The practical importance of the action of 606 on the mucous patch will escape no one's attention. If by means of a single injection (now painless) a patient can be prevented with almost certainty from transmitting the disease to others, we have acquired a means of treatment whereby in dispensary and hospital out-patient departments the large category of men and women who have neither time, education nor intelligence sufficient to insure a proper treatment by mercury being carried out can be rendered quite innocuous to the community at large in a very short space of time. The result of the method must unquestionably be a rapid diminution in the number of fresh cases within a very short period.

But the triumph of this new remedy appears to be in the ulcerous forms of tertiary syphilis and in early malignant syphilis, — just where we most needed it, as many of these cases either resist mercury altogether or yield to its action in a very slow manner. As the writer says: "It seems as though the deeper and more destructive the lesion, the quicker the cicatrization; the greater the resistance shown to mercury and iodism, the more brilliant the results from 606." In many cases of visceral syphilis its effect is equally satisfactory, and in particular many ocular forms can be treated in this way with most encouraging results. Syphilis of the nervous system is still a debateable ground. Ehrlich does not cease to advise caution where there is organic trouble of the central nervous system; in fact, he would apparently prefer that at least for the present the remedy should not be used with this category of patients at all. Some physicians, however, have passed over this warning and have published results that have been satisfactory. Possibly the unsatisfactory ones have not been brought into prominence! At any rate, there is considerable talk about a certain number of cases treated by 606 that have ended fatally.

The question of heredo-syphilis, before and after birth, is treated in this excellent review, as also that of its action on the spirochetæ themselves and on the Wassermann test. Several instances have been reported where, on the other hand, 606 failed to act altogether. There are already many cases of relapse after treatment, so that the vision at one time held before our eyes of the cure of the disease by a single injection will have to be relegated to the repository of lost illusions. The article finally treats of the accidents, light and serious, due to the treatment, and of the cases of death following it that have been published. My space, however, is limited and I must be satisfied with referring the reader to this painstaking and up-to-date review of the question.

The general impression resulting from the perusal of this article is that a valuable step in advance has been made, but that the millenium is not yet at hand. Our therapeutics of syphilis have been modified, but not revolutionized; the death knell of mercury and iodide is not yet ringing. To me really the most important side to the entire question, if experience bear out its accuracy (14,000 cases have been treated now, according to the latest statistics I have seen), is that mentioned above: its rapid curative action on the infectious element of syphilis, the mucous patch. "*S.*"

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## RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, NOV. 12, 1910.

| CITIES. | Reported deaths in each. | Deaths under five years. | CITIES. | Reported deaths in each. | Deaths under five years. |
|---|---|---|---|---|---|
| New York | 1,263 | 324 | Waltham | 8 | 1 |
| Chicago | — | — | Pittsfield | 10 | 2 |
| Philadelphia | — | — | Brookline | 2 | — |
| St. Louis | — | — | Gloucester | 10 | — |
| Baltimore | — | — | North Adams | 8 | 3 |
| Cleveland | — | — | Northampton | 11 | 1 |
| Buffalo | — | — | Chicopee | 5 | 3 |
| Pittsburg | — | — | Medford | 10 | — |
| Cincinnati | — | — | Beverly | 4 | — |
| Milwaukee | — | — | Leominster | 4 | 1 |
| Washington | — | — | Hyde Park | 4 | 0 |
| Providence | — | — | Melrose | 3 | 1 |
| Boston | 181 | 38 | Newburyport | 6 | — |
| Worcester | 48 | 15 | Revere | 4 | 2 |
| Fall River | 36 | 18 | Westfield | 6 | — |
| Cambridge | 34 | 8 | Woburn | 6 | 1 |
| Lowell | 36 | 15 | Peabody | 3 | 1 |
| New Bedford | 30 | 13 | Marlboro | 1 | 0 |
| Lynn | 26 | 5 | Attleboro | 2 | 2 |
| Springfield | 35 | 9 | Adams | 4 | 3 |
| Lawrence | — | — | Clinton | 5 | 3 |
| Somerville | — | — | Gardner | 3 | 1 |
| Brockton | 13 | 7 | Milford | — | — |
| Holyoke | 14 | 7 | Watertown | 4 | 1 |
| Malden | 11 | 2 | Plymouth | — | — |
| Chelsea | 8 | 3 | Southbridge | 5 | 1 |
| Newton | 9 | 2 | Weymouth | — | — |
| Salem | 14 | 1 | Framingham | 4 | 2 |
| Haverhill | 8 | 1 | Wakefield | — | — |
| Fitchburg | — | — | Webster | 3 | — |
| Everett | 8 | 2 | Arlington | 3 | — |
| Quincy | — | — | Greenfield | 5 | 1 |
| Taunton | 15 | 3 | | | |

## CHANGES IN THE MEDICAL CORPS U. S. NAVY DURING THE WEEK ENDING NOV. 19, 1910.

SHOOK, F. M., passed assistant surgeon. Detached from the Naval Medical School, Washington, D. C., and ordered to duty at the Naval Hospital, New York, N. Y. Nov. 12, 1910.

## SOCIETY NOTICES.

THE NORFOLK DISTRICT MEDICAL SOCIETY.— A regular meeting of the Society will be held at Masonic Temple, 171 Warren St., Roxbury, Tuesday, Nov. 29, at 8 o'clock. Telephone, Roxbury 22753. Business; Communication: "The Use of Obstetric Forceps in Posterior Positions of the Occiput," Edward P. Starbird, M.D. Discussion opened by Frederick L. Good, M.D. Refreshments after the meeting.

BRADFORD KENT, M.D., *Secretary*,
798 Blue Hill Ave., Dorchester.

NEW ENGLAND BRANCH OF THE AMERICAN UROLOGICAL ASSOCIATION.— There will be a meeting of the New England Branch of the American Urological Association at the Boston Medical Library on Tuesday, Nov. 29, at 8.15 P.M. Program: (1) Demonstration of patients. Reports of cases. Demonstration of specimens and instruments. (2) Papers on tumors of the bladder: (*a*) "Pathology and Prognosis," Dr. Wm. F. Whitney. (*b*) "Some Clinical Aspects Based on a Series of Personal Cases," Dr. Lincoln Davis. (*c*) "The Transperitoneal and Suprapubic Operations," Dr. C. L. Scudder. (*d*) "The Intravesical Operations," Dr. Horace Binney. Discussion.

R. F. O'NEIL, M.D., *Secretary*,
379 Beacon St., Boston.

NEW ENGLAND ASSOCIATION FOR THE EDUCATION OF NURSES.— The fall meeting of the New England Association for the Education of Nurses will be held in the John Ware Hall of the Medical Library Building, 8 Fenway, Boston, Mass., on Wednesday, Nov. 30, at eight o'clock in the evening. The topic of the meeting will be "The New Registration Law; What It Means and Its Advantages." The members of the Massachusetts State Board of Registration will be the speakers of the evening. The public is cordially invited to attend and take part in the discussion.

## RECENT DEATHS.

DR. FRANK N. LEWIS, who died on Nov. 13 in New York City, was born in 1857 at Burlington, Vt. He was an academic and medical alumnus of the University of Vermont. After serving as an interne at the Mary Fletcher Hospital, Burlington, Vt., at the Brooklyn Eye and Ear Hospital, and at the New York Eye and Ear Infirmary, he settled in practise in New York City in 1888. He became instructor in ophthalmology at the New York Post-Graduate Medical School, and was visiting surgeon and later executive surgeon at the Manhattan Eye, Ear, and Throat Hospital. He was a member of the American Medical Association, of the New York State Medical Society, of the New York Academy of Medicine, of the American Ophthalmological Society, and of the New York Ophthalmological Society. He is survived by his widow.

DR. JAMES ROSS WAGGENER, who died at Brookline, Mass., on Nov. 17, was born in Kentucky in 1846. On Sept. 12, 1872, he entered the United States Navy, in which he became medical director, and on Jan. 20, 1903, was commissioned captain. Since his retirement on May 6, 1907, he had lived in Brookline.

DR. PLACIDO FERRATI, who died in Worcester, Mass., on Nov. 16, had practised medicine in that city since 1905. He graduated from the Tufts Medical School, Boston, in 1902.

DR. DANIEL WAYLAND JONES, who died in Boston on Nov. 18, was born at Ashburnham, Mass., on Jan. 14, 1829. He received the degree of M.D. from the University of New York in 1852, and for ten years thereafter practised medicine in Medfield, Mass. He then went to Philadelphia for a time, and in 1871 and 1872 traveled and studied in Europe. On his return he at first settled in Newton, Mass., where he served for a time as city physician. In 1878 he came to Boston, where he continued in practise until his retirement in 1894. During his later years he had made a specialty of diseases of the rectum. He was a member of the American Medical Association, The Massachusetts Medical Society, and the Massachusetts Medical Benevolent Society. He was a widower.

DR. THEODORE R. BURGTORF, a well-known physician of the Borough of the Bronx, New York City, was shot and killed by his wife as he lay sleeping beside her early in the morning on Nov. 14. Mrs. Burgtorf then shot herself twice in the abdomen, and is in the Fordham Hospital, with some chance of recovery, it is stated. She admitted the shooting, saying that she was crazed by pain, which she could endure no longer, and was prompted by a desire not to leave her husband behind. For a long time she had been suffering from tic douloureux, and some three years ago, in a paroxysm of pain, she attempted to kill herself and her son. Three months ago she underwent an operation, and it had been thought that she was improving. Dr. Burgtorf was fifty-five years old and a native of Germany. He was graduated from the Long Island College Hospital, Brooklyn, in 1894, and was very successful in practise. He is survived by one son, Adolph, twenty-four years of age, a graduate of the New York College of Dentistry.

## BOOKS AND PAMPHLETS RECEIVED.

Treasury Department. Reprint from Public Health Report No. 49. The Present Organization and Work for the Protection of Health in the United States. By Walter Wyman. 1910.

The New Remedies for 1909–1910. American Druggist Handy Guide, No. 8. Reprint.

Notes and News. Mr. Balfour on Cancer Research. Reprint.

Treasury Department. Public Health Bulletin No. 39. Studies upon Leprosy. By Donald H. Currie and Harry T. Hallman.

Treasury Department. Reprint from Public Health Reports No. 50. The History, Development and Statistics of Milk Charities in the United States. By J. W. Kerr.

Department of Commerce and Labor. Bureau of the Census Bulletin No. 108. Mortality Statistics, 1909.

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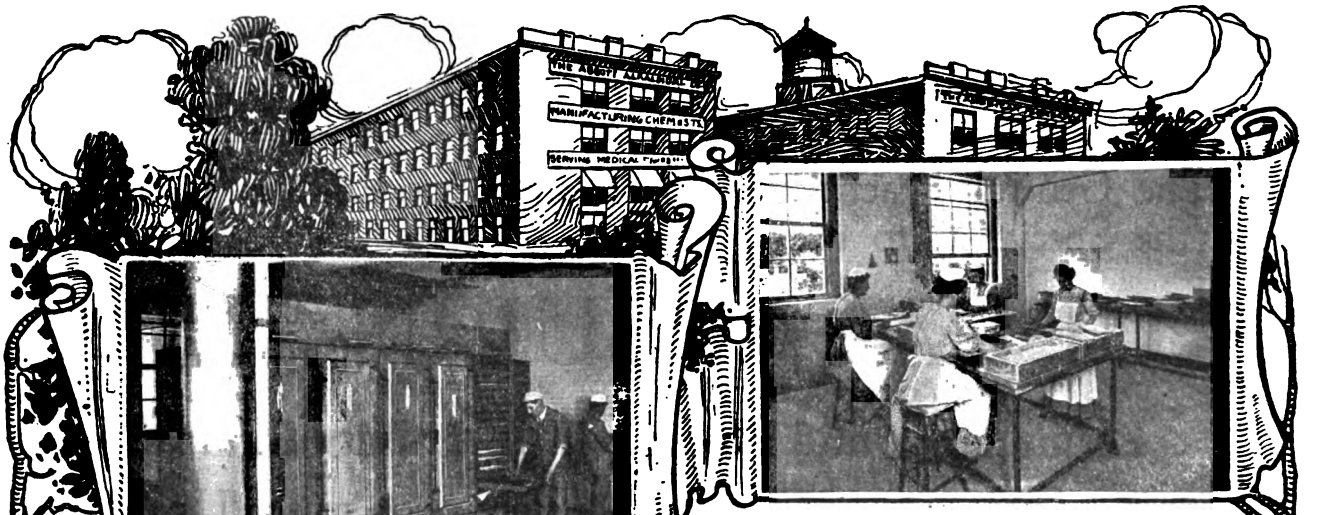

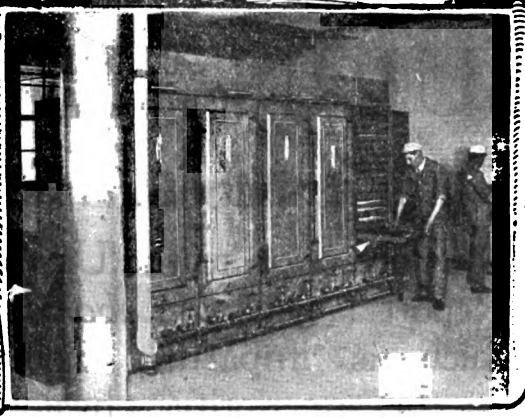



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# *A Few Reviews of*

# Goldthwait, Painter & Osgood's Diseases of the Bones and Joints

have been published. They are unanimous in their statement that the book is of exceptional value, that it is original, and that the purpose of the authors plainly set forth has been well accomplished.

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* * Although the authors in their preface disclaim any intention of writing a book on orthopedic surgery, this book is written with a remarkable breadth of view, and in a most scientific manner, and sums up well the modern knowledge on this branch of medicine. There is a marked absence of "canned material" from the book, which is most refreshing, the pathology is up to date and unusually good, and the differential diagnosis of the various diseases, except that of Potts' disease, is excellent. The chapter on osteomyelitis is far better than that on the same subject in most surgical textbooks, and those on tuberculosis of the smaller joints, the treatment of hip disease, and the technic of operations on tuberculous joints are all very well done, also that on pelvic articulations. The illustrations are numerous and clear, and made clearer by the notes that accompany them. It is evident throughout the book that the authors have studied their joints, and whenever it is possible they prove their case. The inclusion of a large number of histories is somewhat of a new departure. — *The Medical Record.*

---

The authors have entitled the book "Clinical Studies," perhaps to disabuse the minds of those who might expect a "textbook" along the old lines, and they offer these studies primarily "to those practitioners of medicine to whom sufferers from joint disease usually make their first appeal." This does not mean that the book is elementary in its scope. It represents, on the contrary, a large part of the experiences, deductions and also results of original investigations of three busy men handling annually a large amount of clinical material. But as the style of presentation is up to what we expect from Boston, this is a work which can be read from cover to cover by any medical man. * * *

As a whole, the volume stands as a contribution of science to humanity. Its pages not only show a spirit of aiding the cripple, but also breathe patriotic and humanitarian desires to help the nation and the race. It will awaken an interest in bone and joint diseases that, so far, has been dormant in many. It is another solar-plexus blow to the diagnosis "rheumatism." It should be read by every one who has treated, does now treat, or ever expects to treat, a case of bone and joint disease or disability. — *The Journal of the Minnesota State Medical Association.*

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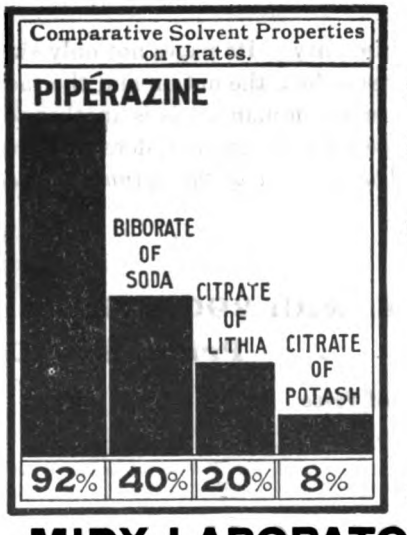


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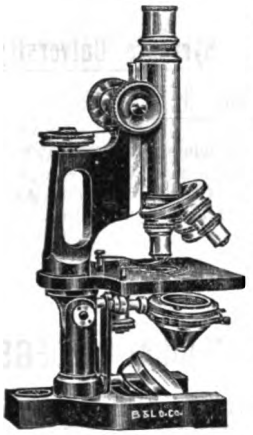

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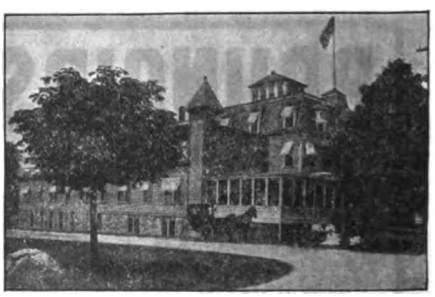

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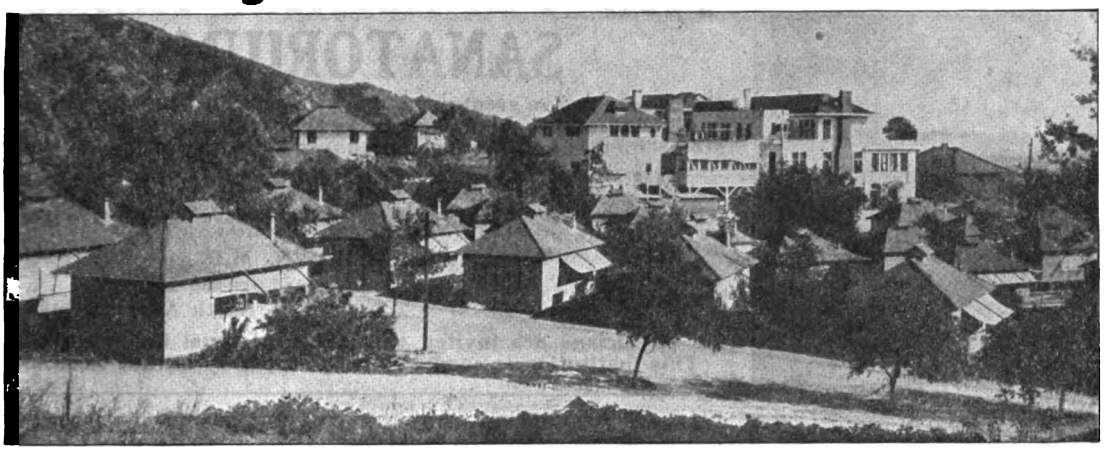

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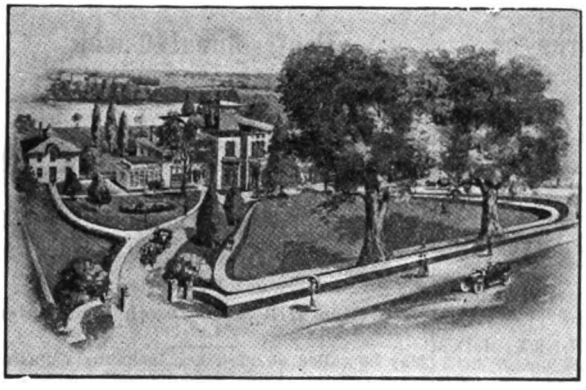

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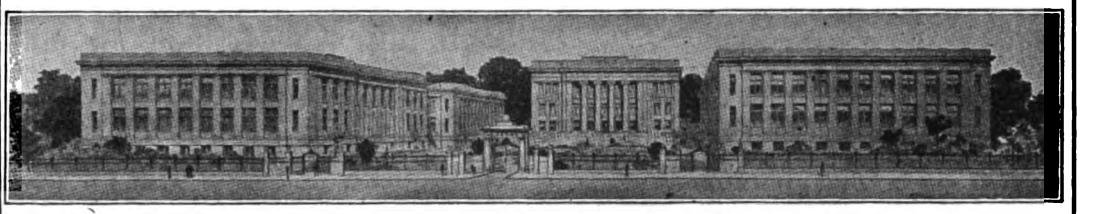

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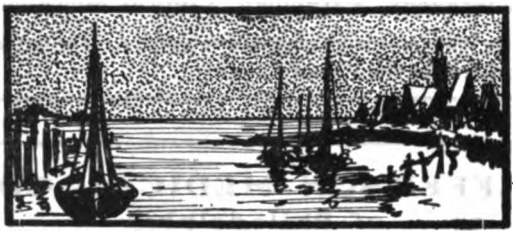

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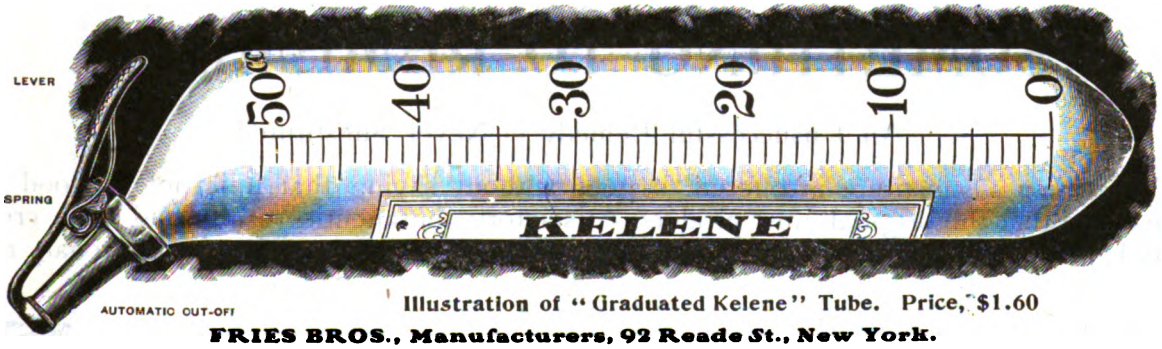


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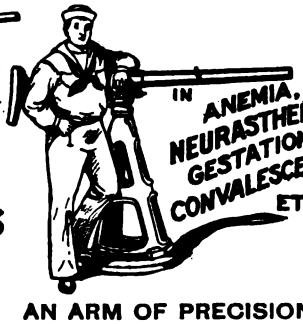

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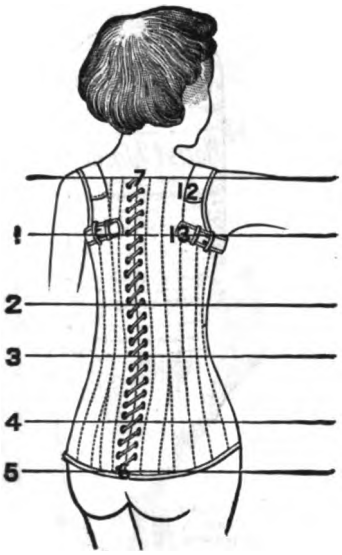


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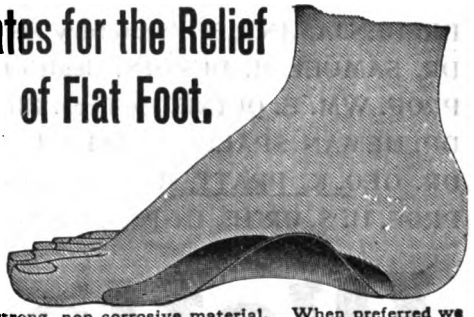

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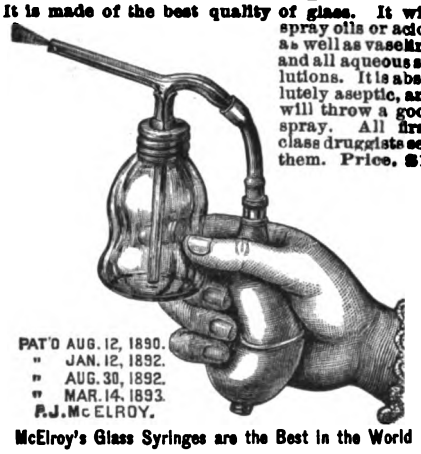


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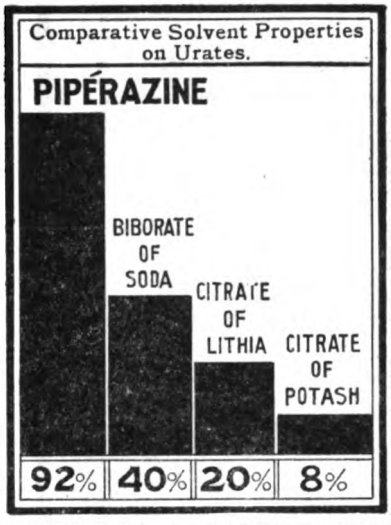


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*A Few Reviews of*

# Goldthwait, Painter & Osgood's Diseases of the Bones and Joints

have been published. They are unanimous in their statement that the book is of exceptional value, that it is original, and that the purpose of the authors plainly set forth has been well accomplished.

---

Although the authors in their preface disclaim any intention of writing a book on orthopedic surgery, this book is written with a remarkable breadth of view, and in a most scientific manner, and sums up well the modern knowledge on this branch of medicine. There is a marked absence of "canned material" from the book, which is most refreshing, the pathology is up to date and unusually good, and the differential diagnosis of the various diseases, except that of Potts' disease, is excellent. The chapter on osteomyelitis is far better than that on the same subject in most surgical textbooks, and those on tuberculosis of the smaller joints, the treatment of hip disease, and the technic of operations on tuberculous joints are all very well done, also that on pelvic articulations. The illustrations are numerous and clear, and made clearer by the notes that accompany them. It is evident throughout the book that the authors have studied their joints, and whenever it is possible they prove their case. The inclusion of a large number of histories is somewhat of a new departure. — *The Medical Record.*

---

The authors have entitled the book "Clinical Studies," perhaps to disabuse the minds of those who might expect a "textbook" along the old lines, and they offer these studies primarily "to those practitioners of medicine to whom sufferers from joint disease usually make their first appeal." This does not mean that the book is elementary in its scope. It represents, on the contrary, a large part of the experiences, deductions and also results of original investigations of three busy men handling annually a large amount of clinical material. But as the style of presentation is up to what we expect from Boston, this is a work which can be read from cover to cover by any medical man. * * *

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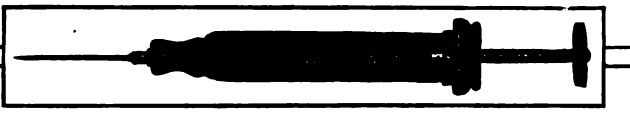

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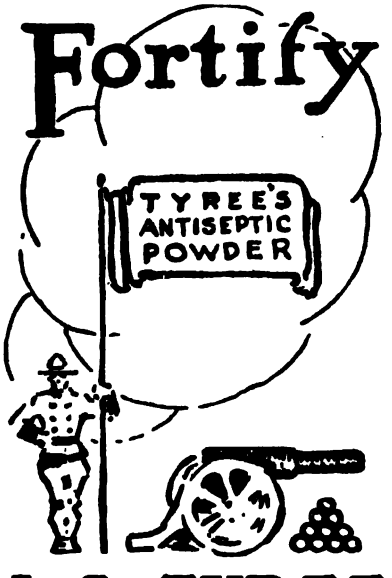


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## Original Articles.

### THE DOCTRINE OF VITALISM IN MEDICINE.*

BY M. G. SEELIG, M.D.,
*Assistant Professor of Surgical Pathology in St. Louis University.*

BETWEEN living and non-living matter there is the fundamental difference that in living matter there is always something else present in addition to the properties found in non-living bodies. This additional "something" endows living bodies with a "tendency to disturb existing equilibria, to reverse the dissipative processes which prevail throughout the inanimate world, to store and build up where they are ever scattering and pulling down; the tendency to conserve individual existence against antagonistic forces, to grow, and to progress, not inertly taking the easier way, but seemingly striving for the best, retaining every vantage secured and working for new ones." This quotation from Professor Ward's, "Naturalism and Agnosticism" serves excellently the twofold purpose of defining life and of emphasizing the "something additional," which, for want of better understanding, we call "vital force." Vitalism concerns itself solely with the abstract thought that there is inherently resident in living matter, a directing element or force that is not under the control of the known laws of physics or chemistry. Vitalism is the *testimonium paupertatis* of the scientist, his credo expressed in terms of honest agnosticism.

Antipodal to this doctrine of the inscrutability of the fundamental basis of life stands the dogma of the non-vitalist: that since many of the phenomena of life conform with the laws underlying the properties and actions of inorganic bodies, we have every reason to assume that the sum total of activities constituting life is as much subject to the laws of chemistry and physics as is the sum total of activities of gunpowder or of the threshing machine. According to this view the human body is a machine, not only in the sense that its activities are directed towards a purposeful end, but also in that each step towards the accomplishment of this end is predicated upon a definite axiom. The sum total of these axioms constitutes the great body of natural law. There are, says the non-vitalist, many axioms still in the crucible of proof, many still unguessed; but the result of the final assay will invariably be the disclosure of a principle as essentially mechanical, physical or chemical as are the already established laws of the inorganic world. The assumption of an intangible, immeasurable vital force is, according to the doctrine, unnecessary and, to say the least, uninspiring.

To attempt to set a measure of comparative value on these two doctrines of vitalism and mechanism would inevitably lead us on to the treacherously thin ice of metaphysical argumentation. Our interests, I take it, are primarily medico-historical, and out of respect to those limited interests, the moot points of static and dynamic teleology, abstract causality, things in themselves, perception, the ego and consciousness must be left tenderly in trust with the philosopher and psychologist. This sacrifice to the needs of medical history should not be made, however, without full consciousness that the trust funds are valuable assets, subject to claim on demand. If justification be required for such brusque and autocratic refusal to incorporate philosophy with history, it can be offered in an exceptionally concrete fashion. This small pamphlet of nineteen pages by Prof. A. Bier, entitled "Ueber die Berechtigung des Teleologischen Denkens in der Praktischen Medizin," represents a philosophical defense of associating the phenomena of disease with the idea of purposefulness; the redness, pain, swelling and heat characterizing inflammation are all expressive of nature's purpose to overcome the disease. Bier characterizes this type reasoning as teleologic and emphasizes a professed unwillingness to camp with the vitalists and their mixed company of "unklaren Köpfe und Mystiker." This large volume of three hundred and fifty pages by Dr. Thoele, of Hannover, written in answer to Bier, not only charges him with being tautological, mystical and unscientific, but actually refers these charges to the fact that he has reasoned faultily on a vitalistic basis. Our justification, then, for dismissing philosophy must rest largely on the same basis as Osler's reason for avoiding "thorny theological questions," namely, the layman's natural desire to seek shelter under the wing of authority. While the authorities are settling their terms, indulging in their polemics and establishing their compromises, the medical historian may exercise his uncommon privilege of surveying the arguments without specifically entering them.

Let the survey begin with Aristotle — surely an appropriate start; for Aristotle occupies the position of an apostle both in matters medical and philosophical. His two important works, "The History of Animals" and "Concerning the Soul" served to establish a medico-philosophical autocracy of thought that held sway down through the Middle Ages. Many of his fundamental conceptions in anatomy and physiology, we know, are incorrect, but the basis of his reasoning is eminently sound. "It demands most careful examination," he says, "to determine in just what fashion an animal or plant develops from seed; for surely everything that has occurred must occur from something, through something and as something; but after all, the important factor is not so much *out of what* the parts develop as *through what* [force] they develop." Driesch construes the Aristotelian doctrine regarding development in such fashion that the soul is made to vivify the semen, thus preparing it to coalesce properly with the female element. This is almost undefiled vitalism. There is much in Aristotle, despite Driesch, that forces one to recognize his appreciation of the similarity existing between ontogeny and human craft and art work; much, in other words, that labels him as a mechanist. The interpretation of what he

*Read before the Boston Society for Medical Improvement, Nov. 14, 1910.

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says is often difficult and obscure, but whether Driesch be right or wrong in the construction he places upon Aristotle's doctrine of development, and whether it be permitted any one to assert dogmatically that Aristotle was or was not a vitalist, it is certainly true that the old philosopher, dissatisfied with the purely mechanical explanation of life, felt the inner impulse and necessity of wrestling with the question of the rationality of existence; he groped about for something higher than the purely mechanical, and, as a result of his groping, he laid down, in rather unclear fashion, it is true, a problem which Eucken, in his recent Noble prize essay, characterizes even to-day as "torturing and pressing in that what we held a sure possession now becomes an object of weary search."

In reality, Aristotle occupied a middle position between the pure idealism, pantheism if you please, of Thrales, Empedocles and Plato, and the materialistic mechanistic doctrine of Democritus. He enjoyed the privilege, however, of working in a more clarified atmosphere than these, his predecessors, for Hippocrates before him had firmly established the essential difference between the organic and inorganic worlds. The Hippocratic doctrine of pneuma is important, not only because it is the earliest medical explanation of the basis of life, but also because, appropriated as it was by Galen, it maintained authority as a doctrine for fifteen centuries. This idea of pneuma as promulgated by Hippocrates is such an inextricable snarl of possibilities as to defy unraveling. To one it appeals as a material something comparable to oxygen; to another as an impalpable, intangible, sole-animating substance, theoretically essential to an understanding of life processes; and, accordingly as one construes it, he is mechanist or vitalist. From an historical point of view, this alone is significant: that, following Aristotle in succession, the Alexandrian schools of medicine and the school of methodists represented by the Asclepiadists, added not one whit, not even by way of subtlety, to the views of Hippocrates and Aristotle. Likewise, when Greek medicine was transplanted on Roman soil, and reinvigorated by Galen, nothing essential was added to the former doctrines concerning the vital principle of life. Galen's classification of pneuma or spiritus into "animal spirits," "vital spirits," and "natural spirits," with their subordinate "attractive," "propulsive," "retentive" and "secretive" faculties, adds nothing either new or practical, serving merely to emphasize again the inevitable groping for light, the restless search for a final cause.

After Galen — the deluge. Roman medicine declined, Rome fell, and the interregnum of intellectual darkness set in. Mysticism, superstition, folly, loose thinking, mad-cap doctrines and insane dogmas were the orders of the days. In the general tottering and fall, medicine crumbled with the rest. The Middle Ages knew no vitalism, no mechanism, no nothing; for all these years the field of thought lay fallow. In course of time, however, the fallow field began to bear fruit as fallow fields always will. The renaissance was inaugurated by Columbus, Gutenberg, Copernicus and Luther, during the fifteenth and early sixteenth centuries. Medicine mirrors the reawakening during the sixteenth century in such names as Vesalius, Fallopius, Servetus, Eustachius and Paré, and in such facts as the founding of ophthalmology, and the laying claim to botany and chemistry as subservient to medicine. With the announcement of Harvey's discovery, medicine emerged from the period of renaissance and started on a route of advance which, for directness of course was never before equalled. From now on, practically every name of historical significance in medicine stands for an individual who both promulgated a new scientific theory or fact and concerned himself in some fashion with the doctrine of vitalism, either by way of disclaiming or asserting belief in vital force as a ruling element in the organic world.

Before entering farther in the chronological discussion of the medical history of vitalism, it will be of more than passing interest to note just how the problem assumed an importance so great as to protract a discussion for three centuries. There is a German word which characterizes the swing and authority of a movement of thought as a "tendenz." Such a tendenz, whether it manifest itself in the arts or in the natural sciences, is almost invariably the outcome of the preestablishment of a philosophic doctrine; for it is as impossible to restrict the influence of an Aristotle, a Kant, Nietzsche or Spencer to the domain of pure philosophy as it is to limit the laws of gravity to falling apples. Let us, for example, consider Bacon and Descartes, the two men who did most to revolutionize philosophical thought in the seventeenth century. In reality, these two philosophers did not work simultaneously, — Descartes superseded Bacon, — but their combined effort resulted in the establishment of the doctrine that all natural phenomena are made up of scales of facts, the more complex ones resting for their explanation upon the simpler ones, but all of them governed by primary laws. Bacon enthroned doubt, Descartes consecrated it, and then each proceeded to the development of his own system. Bacon's system was in itself a machine, — an organum, — constructed so as to enable the mind to overcome obstacles, to open vistas, to riddle seemingly unsolvable problems. He pointed out the supreme importance of observation and induction as the essential elements in the final solution of primary laws. His insistence was upon verification. Descartes, in his turn, strove to apply to the human body mathematical theorems similar to those used in reaching his famous conclusions concerning light refraction. Underlying his mathematics and his philosophy was the fundamental proposition that the human body is a machine. And so, Descartes and Bacon were instrumental in setting in motion a tendenz that colors medical theories to-day even more deeply than three centuries ago.

Beyond all question of doubt, the establishment

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by Descartes and Bacon of the doctrine of primary governing laws in nature did much to correlate the phenomena of the human body with activities of the inorganic world, activities brilliantly studied at this very time by Galileo and Newton. In so far as this correlation holds true, medicine, in common with the philosophy of the time, must be regarded as mechanistic in tendency. The iatrochemical and iatrophysical schools, developed during this period under Sylvius, Willis, Sydenham, Santorini, Baglivi, Bellini and others, mirrors most clearly the tendency of the times to reason along lines of pure materialism. But just as in the philosophy of Descartes the machine teaching had a counterpoise in the shape of an extra-corporeal force, — the God element, — and just as in the system of Bacon, with all its rigid adherence to the observation of natural law and order, there was nevertheless a hearkening to the idea of "divine inspiration," so, too, in the medicine of these times, the doctrine of pure mechanics was opposed by a dogma more spiritual in tone. Van Helmont, for example, impressed medicine deeply with his theory of Archeus — an extracorporeal force practically unlimited in its regulative powers. If exception be taken to the introduction of Van Helmont's views, on the ground that they were so saturated with piety and mysticism as to be valueless, we still shall not have to travel far afield in order to deduce that medicine was not wholly mechanistic in her trend. William Harvey, in his epoch-making discovery, demonstrated in a fashion never since excelled, the fundamental interdependence of body function and the laws of mechanics. One cannot avoid the conclusion, however, that Harvey's belief was firm in the existence of a force above pure mechanics, a "something over" after mechanics have accounted for everything probable. In his "Exercitationes de Generatione Animalium" he states that the developing fetus is a natural body, animated, however, by a soul; it is the product not of the uterus, but of the soul (*non opus uteri sed opus animae*). The development of the human body is the work of an "opifex," and is the result of the existence in the germ of a "principium," which, for the want of a better term may be called "primordium vegetable," "and he," says Harvey, "who unqualifiedly correlates the body with the idea of a machine, is not a proper judge [*aequus aestimator*] of nature." On the basis of such excerpts as these, Driesch classifies Harvey as an "unbefangener Vitalist."

During the eighteenth century, medicine, in common with the other sciences, underwent a general process of clarification. The philosophy of Locke, Voltaire, La Mettrie and Leibnitz furnished the necessary thought stimulus to awaken the labors of such men as Bernoulli, Galvani, Volta, Priestly, Lavoisier, Linnæus and Buffon. The reaction in academic medicine was furnished by Albrecht von Haller, Valsalva, Albinus, Camper and Winslow, and in practical medicine chiefly by the famous trio of systematizers, — Hoffmann, Stahl and Boerhaave. Bernoulli, for the pure scientists; Haller, for the biologists, and Boerhaave, for the practical medical men, referred the phenomena of life back to "spiritus animales"; Stahl, the father of "animismus," located the regulation of all organic activity in "anima," the ultimate principle of life. Probably the most interesting feature of this era is the evident tendency to unravel the problems of organic life by brilliant experimentation, to construe phenomena as forces, and yet, withal, to recognize the existence of a higher force (spiritus animalis, phlogiston, anima), whose very definition was impossible. Dismiss from consideration these attempts to interpret the final principle, and the era is one of mechanistic activity; concentrate on the thought devoted to explaining the essence of life and we are dealing with vitalists striving to interpret the ultimate. It is little short of fascinating to contemplate the confusion of thought and the activity of strife that went hand in hand with Leeuwenhoek's studies of spermatozoa, Swammerdam's and Malpighi's embryological studies and the work of Reaumur and Spallanzani on regeneration. Bound up in the arguments regarding evolution and epigenesis, and in the theories of the ovulists and animalculists, there is the ever-present confusion due to ignorance of final causes combined with an almost insatiable desire for "more light." Naturally studies of this sort, approaching as they do scientific bed rock, compel one to declare either for or against the existence of a vital inherent formative force. If he accepts the existence of such a force his task is comparatively simple, consisting merely in a declaration of belief such as Casper Wolf makes in his *vis essentialis*. If, on the other hand, he denies the existence of such a force, he must either "stack arms" or else conceal his uncertainty in a confused terminology such as that used by Weismann in his elaboration of biophores and determinants.

If space permitted, it would be interesting from a purely historical point of view to survey the actual systems of medicine that owed their origin in large part to this eighteenth century discussion of vital force; to show, for example, how Cullen, Brown, and, through Brown, our own Benjamin Rush, Sauvages, Rasori and Glisson worked under the direct stimulus of the immediately preceding age; but the detailed study of system must give way to the larger purpose of tracing the influence of vitalism through the later period of medical history. Indeed, it is scarcely to the point to consider Blumenbach, who, toward the end of the eighteenth century, summed up the entire subject in two small monographs, thus earning for himself the distinction of placing the doctrine of vitalism on a basis of scientific rationalism. The important consideration is this: that during the discussion that began with Harvey early in the seventeenth century and ended with Blumenbach late in the eighteenth century, medicine was making steady continuous progress. An inventory shows, as gains to medicine, the circulation of the blood, the development of embryology, the

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demonstration of bacteria, the birth of histopathology, the rational beginning of physiology and a tremendous advance in the systematic study and development of anatomy and clinical medicine. On the other side, philosophy may claim the expansion of Harvey's original idea of vital principle or "primordium vegetale" into Blumenbach's conception of irritability, contractility, sensibility and nisus formativus (*bildungstrieb*) as four coequal representatives of vital force. If we be granted the privilege, for argument's sake, of assuming that Blumenbach's quartet clarified the philosophic atmosphere, we can even then only say that while the atmosphere was clarifying, medicine was thundering ahead.

Indeed, nothing illustrates more clearly the inherent tendency of practical and scientific medicine to establish its own equilibrium, to set its own independent pace of advancement, than the fact that steadiness was secured and advance accomplished during this era, side by side with the promulgation of Kant's doctrines regarding judgment and pure reason, and Schelling's and Hegel's views on "Natural Philosophy." Baas states that if Kant's views regarding the admission only of mathematical reasoning in medicine had gained more influence, the science would have been reduced to a maze of theory. As regards Schelling and Hegel, it suffices to say that their philosophy has been made responsible for such possibilities in medicine as mesmerism, homeopathy and rademacherism. It is difficult to determine whether Schelling and Hegel were expounders of a rational or of a mystic vitalism, and whether Kant was vitalist or not. It is certain, however, that Humboldt, Liebig, Von Baer, Johannes Mueller, Schwann, Schleiden, DuBois Reymond, Helmholtz and Claude Bernard were some of the men who worked under the influence but not under the spell of the new natural philosophy. It is equally certain that Humboldt, Liebig, Van Baer and Mueller were champions of vitalism, and that Schwann, Schleiden, Reymond, Helmholtz and Bernard were champions of the machine theory of life. "Lebensrichtung," "lebensreiz," "primum movens," "vitalen eigenschaften" are some of the terms culled from Liebig, Von Baer and Mueller, indicating more clearly than could a lengthy discussion the complexion of their belief in an underlying vital force.

The middle era of the nineteenth century furnished two epoch-making discoveries that rudely upset the philosophical, or perhaps better said, the metaphysical basis on which the vitalism of these men rested. Following the enunciation of Robert Mayer's doctrine of the conservation of energy, and Charles Darwin's theory of natural selection and adaptation, medical thought became even more emphatically mechanistic in tone than during the old days of the iatromechanical and iatrochemical schools. Helmholtz dealt sledgehammer blows to any doctrine that controverted pure mechanics as a sufficient and all-satisfying explanation of vital processes, and, curiously enough, he based his reasoning on the premise that Mayer's doctrine of conservation of energy established the identity of organic and inorganic forces, leaving no room or place for a purely speculative vital force. Schleiden's and Schwann's discoveries regarding cell life tended, naturally, to strengthen the belief in the power of experiment and study eventually to furnish all the details of a complicated living machine. DuBois Reymond, in his classical and now famous *Ignorabimus* dissertation, further strengthened the materialistic trend first by an avowed *ignoramus* regarding many knotty problems in science, an emphatic *ignorabimus* regarding the possibility of ever explaining the power of thought, and a clear enunciation of his belief that the resort to vital force was futile, because "force" is merely a measure and never a cause. Claude Bernard threw all the weight of his authority against the admission of vitalism in science or medicine, in his "Leçons sur les Phénomènes de la Vie." "What is this tremendously powerful force," he asks, with some heat, "which can accomplish nothing, acting alone?" Against such onslaughts as these, even by the admission of so ardent a vitalist as Driesch, the light of vitalism flickered out! At this stage of medical history it was that there developed the "deadly hatred of philosophy," an era represented by the old Vienna school, a group of men to whom an individual represented a conglomerate mass of functionating organs, and whose absorbing interest was the post-mortem verification and explanation of disturbed function. No philosophy, no speculation, precious little therapy, — just the working out of laws!

Such an attitude of mind is apt to prove and, indeed, did prove to be a bit unsatisfying. All that was necessary to stimulate the spirit of unrest was admissions by such men as His, Goette and Baer for the embryologists, that rational morphology was not to be explained entirely on a purely mechanical basis; the statement by Bunge for the physiologists that, although the theory of mechanics may in time prove satisfactory, just now it is not sufficient to meet the demands, and, finally, the stand taken by Virchow, for the pathologists, that from the purely practical, as contrasted with the scholastic and metaphysical point of view, "sind wir auch in der Pathologie vitalisten." Virchow stated bluntly that he felt compelled to believe that the essential basis of life is a force that must be differentiated from the molecular force of the inorganic world. If such a belief should seem to reflect upon him as a man of science, he could only answer in the words of Chauffard, "Peu d'anatomie pathologique éloigne du vitalisme, beaucoup d'anatomie pathologique y ramene."

It was this new swing of authority that reestablished vitalism on the fairly firm basis that it maintains to-day, and it seems that the strength of the vitalistic argument is mirrored by the reflected light from names of prominence in the world of science. Thoele, for example, has been able to classify many of the later-day medical men of prominence into groups of vitalists, each

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group representing a medical specialty: Pflueger, Weigert, Verworn, Rubner, Ribbert as the group of physiologists and pathologists; Roux as the head and master of the group of embryologists, with Hertwig as coadjutor; Ehrlich, Buchner, Pirquet and others as representing the bacteriologists, and Goldschneider, Edinger and Bier for the clinicians.

But what shall we say to the fact that among these names, despite the assurance of Thoele, there are men who vehemently disclaim vitalistic allegiance? Our answer must be the statement already furnished, that our object merely is to trace consecutively the influence upon and dominance in medicine of thoughts relating to final principles and causes. To attempt to do more than this would mean entering the lists of what Virchow very properly called a *Wortstreit*. Cull over the very small part of the literature on vitalism mentioned this evening, and you will find no less than a score of substitute terms to take the place of the expression "vital force"; each substitute is clothed with its own specific and connotative qualifications, which must, of necessity, be conceded, if orderly and conclusive argumentation is to result, but which, as a matter of fact, are never conceded by any two parties to the argument. It is truly difficult to determine who is vitalist and who not; indeed, there is more than a pale haze of obscurity enveloping the very fundamental terms of mechanism and vitalism. How natural to expect, therefore, that even among the vitalists themselves there should be contending schools. Strecker and Pauly as disciples of the type of vitalism laid down by Bunge stand out in rather sharp contrast to such vitalists as Driesch, Reinke and Schneider — a contrast that has been softened rather than explained away by the work of Uexkuell, of the present-day Heidelberg school of vitalists. Uexkuell's volume came off the press late in 1909. It leaves the problem very much as it found it.

How unsatisfactory a survey of this sort is, no one realizes better than he who makes it, particularly if he makes it with the futile purpose of reaching a final definite conclusion. Satisfaction must come to the medical man solely through the consciousness of having gained an intimate acquaintanceship with the details of a problem, perplexing, it is true, unsolved, and yet, withal, intimately bound up with the advance of his own particular brance of science. Those of us who feel the inner impulse to unravel the complex phenomena of disease are confronted constantly with the ultimate unknowable. However we may construe this ultimate principle, — either as a molecular force or as a force eternally beyond the ken of man, — no one may cavil at our belief, provided we do not allow it to paralyze our efforts.

The danger for science that lurks in vitalism is the tendency to supplant belief in an incomprehensible force by worship of that force. For some of us, the very idea "unknowable" carries with it enough of the mystic to "put my reason to St. Paul's sanctuary. Who can speak of eternity without a solesism or think thereof without an extasie?" ("Religio Medici.") The danger that lurks in the mechanistic doctrine, as has been stated by our own William James, is that "it is essentially a view of things from the outside and knows nothing of how they happen." Vitalism furnishes a ready-made answer to an all-perplexing question. Mechanism suggests, by analogy to the inorganic world, a method of solving perplexities; but, as Taine has pointed out, the method means the creation of a faith by every individual, for himself, thus subjecting himself to every curiosity and to every pain.

What more natural, with William James in our mind, than that those of us who are floundering in doubt should reach out towards a practical system of thought that measures the problem for us by its utility, and emphasizes the spirit of compromise by teaching that truth at any particular time is only provisional and likely to be converted into other forms of truth? For me, just such a compromise is furnished by the Italian philosopher Rignano, when he states that "whether one clearly recognizes it or not, it is just this search for the nature of the vital principle which properly constitutes the principal object and final goal of all biologic study in general." With this definite goal in view, with the application of proper, orderly and logical methods of investigation, it becomes immaterial whether we constitute ourselves a Charles Gradgrind, "a man of realities, a man of facts and calculations. A man who proceeds upon the principle that two and two are four, and nothing over, and who is not to be talked into allowing for anything over. With a rule and a pair of scales and the multiplication table always in his pocket, sir, ready to weigh and measure any parcel of human nature, and tell you exactly what it comes to," — or whether we believe with Burton that it is merely necessary to

"Grant an idea, primal cause, the causing cause, why crave for more?
Why strive its depth and breadth to mete, to trace its work, its aid to implore,
Unknown, incomprehensible, whate'er you choose to call it, call;
But leave it vague as airy space, dark in its darkness mystical."

## PRESENT KNOWLEDGE OF THE LAWS OF HEREDITY.*

BY W. P. GRAVES, M.D., BOSTON.

### GERMINAL CONTINUITY.

The laws of heredity generally accepted at the present day are based fundamentally on the theory of germinal continuity. This theory divides the cells of multicellular organisms into two classes called the *somatic* cells and the *germ* cells. The somatic cells constitute all the differentiated cells which make up the structure and

* Read before the Bigelow Club, Oct. 12, 1910.
Although many authorities have been consulted in the preparation of this paper, the writer is chiefly indebted to Prof. J. A. Thompson, whose writings on heredity are especially clear and illuminating to the beginner.

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various organs of the body. They have only a temporary existence and become disintegrated on the death of the organism. The other class of cells, namely, the germ cells, are the reproductive cells and are represented by ova in the female and spermatozoa in the male. These cells, or the substance which constitutes them, remain undifferentiated throughout the life of the organism. Each one of them carries condensed in its nucleus all the heritable qualities derived through the parent ovum from preceding generations, and under the stimulus of fertilization is capable of passing this inheritance on to succeeding generations. Thus the germ cells possess potentially the quality of immortality. The theory of germinal continuity has been based on facts observed in the development of certain lower organisms. Boveri has shown that the fertilized ovum of the thread worm of the horse divides into two cells, one of which becomes the *parent of all the somatic cells*, and the other becomes the *parent of all the germ cells*. Similar observations have been made in a number of worms and insects. In most cases, however, this distinct separation of the somatic and germ cells at the first division cannot be recognized, and a morphological continuity of the germ cells from ovum to ovum cannot be followed. In order to fill in this gap in our knowledge as to the exact nature of the germ cells in most organisms between birth and maturation, Professor Weismann, the most distinguished of modern evolutionists, has devised the hypothesis of the *germ-plasm*, and his views are at present generally accepted. Weismann's theory may be summarized as follows.

(1) In each development, a portion of the specific germ plasma which the parent ovum contains is not used up in the formation of the offspring, but is reserved unchanged for the formation of the germinal cells of the following generations.

(2) What is actually continuous is the germ plasm "of definite chemical and special molecular constitution." A continuity of germinal cells is now rare; a continuity of intact germinal plasma is constant.

(3) This germ plasm has its seat in the nucleus, is extremely complex in structure, but has nevertheless an extreme power of persistence and enormous powers of growth.

(4) The germ substance proper must be looked for in the chromatin of the nucleus of the germ cell.

(5) The splitting up of the substance of the ovum into a somatic part, which directs the development of the individual, and a propagative part, which reaches the germ cells and there remains inactive, constitutes the theory of the continuity of the germ plasm. (From J. A. Thompson's "Heredity.")

Thus the germ cells form a distinct continuous lineage entirely apart from the somatic cells, and are not to be regarded in any sense as having been produced by the somatic cells. The parent, therefore, whose individuality represents a collection of mortal somatic cells, is not in a strict sense the producer of his offspring, but only the temporary custodian of a portion of the immortal germ plasm. "The animal body is in reality a vehicle for ova, and after the life of the parent has become potentially renewed in the offspring, the body remains as a cast-off envelope whose future is but to die." (Sir Michael Foster.)

Noll eloquently writes: "The vital capacity of the cells of the functioning permanent tissue is always limited in time. Without limit, on the contrary, and never finding a natural close, the vital power of the germ plasm is preserved. This substance does not age. It produces new passing individuals, but it is permanently preserved in their progeny; it is always productive, always growing young and increasing. Thousands upon thousands of generations which have arisen in the course of millions of years were its products, but it lives on in the youngest generations with the power of giving origin to coming millions. The individual organism is transient, but its germ plasm, which produces the immortal tissue, preserves itself imperishable, everlasting and constant." [1]

A graphic conception of the theory of germinal continuity can best be given by Wilson's familiar diagram (Fig. 1).

### PHYSICAL BASIS FOR THE LAWS OF HEREDITY.

It has long been known that the new individual results from the union of only two germ cells, namely, the ovum of the female and the spermatozoon of the male, but the nature and organization of these germ cells is a matter of comparatively recent knowledge and one of surpassing interest. It is not within the scope of this paper to review the different modes of reproduction, namely, the budding, division and sporulation of unicellular organisms, nor, in multicellular organisms, the rare cases of true hermaphroditism and parthenogenesis. We can refer here only to sexual reproduction, viz., the union of two germ cells of opposite sexes, so-called amphimixis. The ovum is a sphere of comparatively large size containing living matter which is called cytoplasm, together with a certain amount of nutritive material. It contains a central kernel or nucleus which is a network of delicate threads carrying minute masses of stainable material which is called the chromatin. This chromatin under certain forms of activity separates into definite

[1] In this quotation the expression "germ-plasm" has been substituted for "embryonic substance" which occurs in the original.

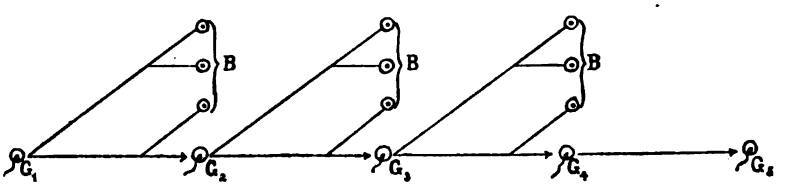


FIG. 1.

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small rod-like masses which are called chromosomes. All the cells in the body of a given individual contain exactly the same number of chromosomes, and every individual of a given species possesses the same number of chromosomes in his cells.

The spermatozoon is much smaller than the ovum, and its size may be less than one millionth of the egg of the corresponding species, the egg under such circumstances being swollen with nutritive material. Most of the cytoplasm of the spermatozoon resides in the tail, the function of which is purely one of locomotion. The nucleus is situated in the head and usually contains exactly the same number of chromosomes as does the corresponding ovum. While the ovum is passive, the spermatozoon is active and motile.

As will be shown later, all the characters of inheritance probably reside in the chromosomes, and it is, therefore, to a study of these remarkable bodies that we must turn in order to have a clear understanding of the laws of inheritance. As has just been said, every species of plant or animal has a fixed and characteristic number of chromosomes "which regularly recur in the division of all of these cells; and in all forms arising by sexual reproduction the number is even." (Wilson.) For example, sharks have thirty-six chromosomes; the mouse, salamander, trout and lily have twenty-four; the ox, guinea pig, man and the onion have sixteen. The even number of chromosomes is due to the derivation of one half the number from each parent. In 1883 Van Baneben made the remarkable discovery that the nuclei of the ripe ovum and spermatozoon contained each one half the number of chromosomes characteristic of the body cells. It has also been discovered that this reduction in the number of chromosomes takes place two generations before the formation of the definitive germ cells. This process is termed the *maturation* of the germ cells, and it is by this means that the number of chromosomes in a given species is kept constant.

The actual process of amphimixis, or the union of the ovum and the spermatozoon, and the future development by division of the ovum is too complicated a one to be described in this paper. It may briefly be said, however, that after the spermatozoon has bored its way into the ovum, the surrounding membrane becomes thickened and prevents the entrance of other spermatozoa. The chromosomes in the nuclei of the two united cells then split longitudinally, and the fragments from each cell pair off equally in opposite poles of the ovum in such a way that, when the daughter cells are formed by the division of the ovum, each daughter cell receives an exactly equal contribution from its paternal and maternal chromatic substance. Inasmuch, therefore, as the chromatic substance contains all the heritable qualities, it follows that the new individual receives an exactly equal inheritance from both his father and mother.

### PROOF THAT THE NUCLEUS IS THE BEARER OF HERITABLE CHARACTERS.

It is generally accepted that the nucleus and not the cytoplasm of the germ cell transmits the heritable qualities of the individual. Arguments for this view are that the nuclear elements divide with an exact equality, while the cytoplasm does not; the important phenomenon of maturation takes place in the nucleus and not in the cytoplasm; the spermatozoon contains only a relatively small amount of cytoplasm, which is almost completely used up in the formation of its organ of locomotion; the ovum, on the other hand, contains a relatively large amount of cytoplasm, which apparently is used as nourishment during the early stages of development of the new individual.

Extraordinary experiments in artificial fertilization strongly corroborate this theory. Boveri dissected out the nucleus from the ovum of a sea-urchin. He then fertilized the enucleated ovum with the normal spermatozoon of another species. The offspring from this union resembled only its father.

Delage divided a sea-urchin's egg into two parts, one of which contained the nucleus. These two parts, together with a complete normal egg, were then allowed to be fertilized by spermatozoa of the same species. The normal ovum developed into a normal sea-urchin; the portion of the dissected ovum which contained the nucleus developed into a normal sea-urchin of smaller size; the portion of the dissected ovum without a nucleus developed, but incompletely. This experiment showed that fertilization can take place with only one nucleus, but that the full quota of cytoplasm is necessary for complete normal development. Loeb has caused the eggs of sea-urchins to develop parthenogenetically by changing the chemical composition of the sea water. In other words, he caused the sea-urchin eggs to grow without fertilization by a spermatozoon, the converse, therefore, of the experiments of Boveri and Delage.

These experiments show that there must be at least one nucleus present to cause development, and also that the nucleus of each germ cell, both male and female, contains all the elements for the production of a perfect individual of the species. They also go to show that the liberating stimulus which gives rise to the unfolding of a new individual is, in reality, a chemical reaction.

### HEREDITY AND VARIATION.

The facts of heredity and evolution depend both on the tendency in species of like to beget like, and also on the tendency of species to continual variation. In complex organisms, although the offspring always bears a general resemblance to its parent, the two are never exactly alike. This tendency of the offspring to deviate from its parent forms the basis of evolution. The tendency to resemblance in type is termed the "inertia of species," and may be illustrated in the human species by the persistence of woolly hair in the negro, the slanting eyes of orientals, the oval face of the Eskimo or the characteristic nose of the Jews. Many animals have lived on unchanged for many millions of years. For example, the bony structure of the Lingula of to-day is exactly like the fossils of the Silurian ages.

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The science of heredity is chiefly interested in the modes and character of changes in type which occur in species. These changes are divided into two important classes, referable to the two classes of cells into which the organism is divided, i. e., the somatic cells and the germ cells. Those changes which affect the somatic cells are termed *modifications*, and those changes which take place in the germ cells are called *inborn variations*. This classification is of extreme importance in the understanding and practical application of the laws of heredity, and for that reason it is necessary to give special attention to its consideration.

### MODIFICATIONS.

From the day of its actual birth, i. e., the division of the fertilized mother ovum, the new being is in a state of continual adjustment to a complex environment. The organism possesses a normal amount of elasticity, and, after ordinary adjustment, as Thompson well puts it, "like a bow unstrung rebounds to its previous state." Examples of such adjustment and rebound are the disappearance of sunburn after a summer vacation, the recovery from the effects of heat or cold or infectious diseases, etc.

In other cases, however, the environmental adjustments create a permanent structural change in the soma of the individual. In other words, "the limit of organic elasticity has been transcended," and the bow unstrung no longer rebounds to its previous state, but remains permanently warped. These permanent structural changes are termed *modifications*, or, more familiarly, *acquired characters*. Examples of modifications are the deforming of trees by the wind; the permanent tanning of the skin of soldiers in the tropics; occupation deformities; the small feet of Chinese women; immunity after contracting certain infectious diseases; the blacksmith's biceps, etc. The great importance of the consideration of modifications or acquired characters lies in the problem as to whether such modifications may be transmitted by heredity.

### INBORN VARIATIONS.

In contrast with modifications which have to do only with the somatic cells, inborn variations have their origin purely in the germ cells. In other words, inborn variations include all differences in hereditary resemblance after all modifications have been subtracted. Examples of inborn variations are albinism in the negro; the appearance of extra digits, as in double-pawed cats; the long manes and tails of wonder horses. As to the transmissibility by inheritance of inborn variations there is no question.

To the evolutionist and biologist the analysis and study of inborn variations is of extreme importance, but the discussion of them can in this paper be only briefly alluded to.

Variations are divided into two classes, termed continuous variations or fluctuations, and discontinuous variations or mutations.

### CONTINUOUS VARIATIONS OF FLUCTUATIONS.

Fluctuations are those small variations or deviations from type which occur frequently in every generation. They "amplify or lessen existing qualities without really changing their nature. They always oscillate around an average, and if removed from this for a time they show a tendency to return to it. They are inadequate to make a single step along the great lines of evolution, whether progressively or retrogressively; they do not form the raw material of evolution, as has often been supposed."

Most of the variations which we are accustomed to observe in man and the higher animals are of the fluctuating variety. The deviations from parental resemblance which we observe in our children, such as differences in height, mental acumen, athletic facility, appreciation of or indifference to music or literature, are all fluctuating variations. Deviations observable in our domestic animals which are so important to the breeder, such as speed in a horse, the shape of a dog's tail, special qualities of excellence in cows, hens, pigs, etc., are examples of fluctuating variations. By careful and rigorous artificial selection new types of species may be maintained so long as there is no slackening in the selection. As soon, however, as the selection is slackened the type reverts speedily to the average mean of the species. Darwin believed that new species were created by the natural selection of fluctuating variations, a process which, if true, would involve an enormous amount of time. Most modern biologists admit the possibility of some species having been evolved in this way, but the remarkable discoveries of Mendel and De Vries of the laws of inheritance in plants have, for the most part, completely changed the view of zoölogists with regard to the origin of species in this way, and the generally accepted opinion now is that most species have sprung into being by sudden bounds rather than by the slow creeping process of natural selection. The changes in such cases are supposed to be the result of what are called *discontinuous variations*, or variations which appear suddenly without any observable continuity with previous deviations.

### DISCONTINUOUS VARIATIONS: OR MUTATIONS.

Variations of this kind were considered by Darwin and then rejected. The application of the theory of discontinuous variations to heredity forms the basis of the differences between the modern school of evolution and that of Darwin. Discontinuous variations have been named by DeVries, *mutations*, and it is important to become familiar with this term and its significance, as it appears constantly in all modern literature of heredity. It may be said that they occur rarely as compared with fluctuations, which are constant in every generation. They follow no law of frequency, although it is probable in some species that there may be a periodic tendency to mutations. "They lead by a bound to a new position of organic equilibrium; they breed true to this

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position, and there is no regression to the old mean." DeVries and his school maintain that all species have originated by mutation instead of by the continuous selection of fluctuations. It should, however, be remembered that DeVries is a botanist, and that all deductions concerning mutations have been taken from the study of plants. With regard to mutations in animals, comparatively little is known. Probably such instances as the tailless cats of the Isle of Man, certain breeds of hornless cattle, short-legged lambs, thornless roses, giants, wonder horses, white negroes, are examples of mutations. Apparently mutations may or may not breed true to type.

### TELEGONY AND MATERNAL IMPRESSIONS.

Telegony relates to the popular belief long held by breeders that an hereditary influence of one sire may be exercised on the future offspring of the same mother paired with a different sire. Darwin was a believer in this phenomenon, and cited as a proof the celebrated case of Lord Morton's mare. This mare, a pure-bred Arabian, was paired with a quagga, as a result of which a hybrid was produced. Later the mare was paired with a pure-blooded Arabian stallion and produced two colts with striped markings on the legs and neck. It has long been the belief among breeders of dogs, and apparently not without reason, that a purebred bitch, if accidentally crossed by a dog of another breed, is spoiled for future pure breeding. There are numerous interesting examples recorded of telegony, although it has been shown that very few of them will stand the test of a rigorous scientific cross-examination. The following is an example.

A man of striking physical beauty and marked regularity of physiognomy, blond in type, with blue eyes, had an amorous episode with a young woman of dark complexion. Later the young woman married a man of dark complexion and with unusual irregularity of features. A child was born, which resembled in an extraordinary degree, both in features and in coloring and in other ways, the mother's former lover.

The general belief among investigators of to-day is that there is probably no well-founded scientific basis of truth in telegony.

The popular belief in maternal impressions is extraordinarily prevalent even at the present day. Although striking instances not infrequently occur of birth-marks, deformities, etc., which bear a peculiar resemblance to some powerful impression made on the mother's mind during pregnancy, it is difficult to conceive that there could be any mental influence on the part of the mother which would affect the anatomical structure of the *foetus in utero*, when it is considered that there is absolutely no nerve connection between the mother and the fetus. Probably all cases of so-called maternal impressions are coincidences.

### TRANSMISSION OF ACQUIRED CHARACTERS.

We have seen in an earlier portion of this paper that acquired characters are based on permanent modifications in the makeup of an individual, which have been brought about by the external influences of his environment, and that they are entirely independent of those inborn characters which he has received as an inheritance from the germ-plasm of his parents. It can readily be seen that by far the most important question in the study of heredity is whether acquired characters are transmissible to future generations. The solution of this problem is of moment not only to the biologist, but also to the individual himself in his personal, social and national relations. Herbert Spencer expressed the importance of the question when he said: "Considering the width and depth of the effects which the acceptance or non-acceptance of one or the other of these hypotheses [transmissibility or non-transmissibility] must have on our events of life, the question, Which of them is true? demands beyond all other questions whatever the attention of scientific men. A grave responsibility rests on biologists in respect of the general question, since wrong answers lead, among other effects, to wrong belief about social affairs, and to disastrous social actions."

The debate between those who do and those who do not believe in the transmission of acquired characters has been an interminable one since the time of Lamark, the first great authority to assert transmissibility. He believed that all inherited characters are acquired. Since his time Herbert Spencer has been the greatest champion of Lamarkianism, while Galton, Darwin, Weismann, Huxley and Wallace and most of the modern biologists have been for the most part disbelievers in transmissibility.

The arguments for and against the theory are extremely interesting, but are too numerous and complicated to be more than alluded to in this paper. It can only be said that the arguments against the theory are based largely on the fact that the germ cells, by which the inheritance is carried, remain undifferentiated and distinctly apart from the body cells during the life of the individual, and it is inconceivable that influences which affect only the body cells can be impressed in any way on the germ cells so as to reproduce in a succeeding generation the same particular somatic results.

Anatomical evidence against the theory of transmission is also strong. The practice of circumcision for many hundreds of years has made no difference in the anatomical structure of Jewish babies. Chinese babies are born with normal feet notwithstanding the modificational deformity to which their mothers have been subjected for centuries. No one believes that the removal of the vermiform appendix of every individual of the human race would have the slightest effect in producing an appendix-less species.

It is sufficient for the purposes of this paper to summarize the more common belief of modern evolutionists by saying that *no incontestible evidence has yet been produced that acquired characters may be transmitted.*

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The non-transmissionists, if I may use the term, do, however, make one admission, which compels them at times to occupy a middle ground. They do not deny that the body is subject to certain modificational influences which may be of such a saturating character as to influence directly the germ cells so that they may produce defective offspring. An example of this kind may be seen in the mentally and physically defective children which chronic alcoholics are wont to produce. Other influences, such as lead poisoning, narcotism and possibly toxic effects of certain diseases, may affect the germ cells so as to produce variations in the offspring. It should be remembered in the consideration of this subject that changes which are brought about in the *foetus in utero*, such as deformities by constriction of the cord or infections from tuberculosis or syphilis through the placenta, must be regarded as modifications and not inherited qualities, because in a biological sense the individual is born at the time of the division of the fertilized ovum, and the fetus, having already started on its life cycle, is only a temporary parasite during its uterine sojourn.

Those who believe in the transmission of acquired characters are accustomed to cite as proof of their theory that pathogenic bacteria when subjected to certain degrees of heat for successive generations gradually lose their pathogenic power, and it is asserted that this diminution of virulence is inherited. The other school, however, points out that, as bacteria are unicellular organisms, there is no division into somatic and germ cells. Any environmental influence like heat saturates the entire organism and, therefore, directly injures the germinal substance. A case of this kind is analogous to the effect of alcohol and other saturating poisons which in complex organisms may so affect the germ-cells as to create variations in the offspring.

The non-transmissionists appear to admit that certain environmental nutritive influences, good or bad, to which the germ cells of an individual may be subjected act as a liberating stimulus to set going certain variations which might otherwise have remained latent.

Notwithstanding the general skepticism as to the transmission of acquired characters, the importance of nurture, education and environment must not be underrated. The individual with his raw material of inheritance is extraordinarily plastic. A common-place inheritance carefully nurtured may surpass an excellent inheritance with an indifferent education. The great jumper, Page, was born with weak legs, and in a concentrated effort to strengthen his muscles acquired the character or modification of being the world's greatest jumper. Sandow in his youth was feeble and weakly and acquired his extraordinary development as a pure modification. It is not likely that Page could transmit his saltatory ability, nor Sandow his muscular development, but it is undoubtedly true that both Page and Sandow inherited and could transmit, as an inborn variation, the mental power of concentration which enabled them to succeed so well in their physical training.

Thompson, in summarizing the importance of nurture and education, notwithstanding the impossibility of transmitting their results by inheritance, writes optimistically, "Unlike the beasts that perish, man has a lasting *external* heritage capable of endless modification for the better, the heritage of ideas and ideals embodied in prose and verse, in statue and painting, in cathedral and university, in tradition and above all in society itself."

### HEREDITY IN DISEASE.

The fact that the science of heredity is still in its infancy, and that outside of plant life and the less complex forms of animal life practical facts are meager, is most appreciated when one studies what is known of heredity in disease. This branch of the subject is the one which, of course, is the most vital to the interests of the physician. It seems evident that with the equipment of the rapidly accumulating knowledge which biologists are at present acquiring, the burden of increasing the knowledge of heredity in disease will rest in a large part upon the shoulders of those to whom is given the greatest opportunity for its study, namely, the clinicians and general medical practitioners. While the scientific investigator is studying in his laboratory the wonders of elementary life, the clinician may assist greatly in the solution of problems of heredity by the observation and collection of statistical data which appear almost daily in his professional experience.

From what is known of the subject to-day, it is evident that specific diseases are not directly inherited. It is equally evident that a predisposition to certain diseases may be definitely inherited, this predisposition being of the nature of a germinal variation. As will later be seen in the discussion of the Mendelian theory, heritable qualities may be either positive or negative, that is, an individual may inherit the absence of a quality. For example, the individual with pure blue eyes inherits the absence of some determinant, be it a ferment or what not, which causes the production of pigment in the iris. It may be imagined that an individual predisposed to a certain constitutional disease, as shown by the frequent occurrence of the same disease in his immediate ancestry, inherits the absence of a determinant which would create a resistance to this disease.

There is statistical evidence to show that there may be distinctly inherited predisposition to gout, rheumatism, asthma, cardiac disease, obesity, tuberculosis, insanity and other nervous affections. It is of great importance to determine always whether a certain disease occurs as an inherited germinal variation or whether it is purely adventitious, for on this point depends the question of the transmissibility of the disease. For example, deafness occurring as a germinal variation is transmissible; deafness occurring early in life as the result of accident or infectious disease is not transmissible. Imbecility or epilepsy occurring as inherited variations are transmissible, but if they are the result of a cerebral injury, they

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are not transmissible. The following instance of a family residing in a neighboring town is instructive.

An imbecile father and an imbecile mother have seven imbecile children. The popular story in the town is that the father acquired his imbecility early in youth from being kicked in the head by a horse. Statistical evidence, however, makes it probable that the imbecility of the father was inherited and existed before his injury, because all the children are imbeciles and if he had been normal at birth a certain proportion of the children would be normal. This is substantiated by the fact that one of the imbecile daughters gave birth to three illegitimate children by normal fathers and all three of the children are normal and one of them is of exceptional aptitude.

Certain defects may be germinally inherited which are not diseases in the sense of being pathological processes, but which may, some of them, lead to disease. Such instances are hemophilia color blindness, freckling, diabetes insipidus, myopia, inability to digest the proteids of eggs or milk, etc. Anatomical defects may also be inherited germinally. Examples of this are albinism, absence of metacarpal bones, hare-lip, cervical fistulæ, spina bifida, tailless cats, hornless cattle, earless sheep, etc.; or the variations may be of the plus instead of the minus variety, as polydactylism. Monstrosities are less often due to germinal inheritance than to some injury in utero, as, for instance, from the pressure of an hydramnios or a strand of the amnion.

Microbic diseases, with the possible exception of syphilis, are not transmitted as such. Tubercle bacilli are not carried in the germ cells from either parent, even when the genital organs are infected with tuberculosis. It is true that in rare cases the *foetus in utero* may be infected from the mother through the placenta. Inheritance in the matter of tuberculosis is entirely the transmission of a predisposition to the disease, a predisposition which is intensely hereditary, over 35% of all cases having an immediate tubercular ancestry.

Professor Hamilton writes suggestively of heredity in tuberculosis: "Most likely the particular vulnerability resides in the epithelium, the protective coverings of the body being too little resistant, too easily stimulated by external agencies, and too readily penetrated by the parasite of the disease." That the tubercular predisposition bears some relation to the anatomical structure is borne out by certain physical characteristics frequently seen in the tubercular patient, e. g., very dark or very light hair, bushy eyebrows, long eyelashes, lanugo growth over the spine, narrowness of chest and tallness of stature.

The details of the transmission of syphilitic disease are too well known to be described here.

One of the most important instances with regard to heredity in the light of the present progress of medical science is the transmissibility of acquired immunity to infectious disease. Ehrlich has shown by experiments in rabbits that acquired immunity may pass through the placenta to the *foetus in utero*. Cases have been known where a mother during pregnancy contracted and recovered from smallpox and transmitted her immunity to the fetus. Such immunity is not, however, to be regarded as inherited. The acquired immunity, derived from antitoxins and serums, unfortunately appears only to affect the somatic cells and must be classed with acquired characters or somatic modifications as there is no evidence to show that immunity of this kind is transmissible. This seems to be only an added proof of the inexorable law of the non-transmissibility of acquired characters.

The comparative immunity which certain races gradually acquire to specified diseases is an important question in the study of heredity. Examples of this kind are the gradual diminution of virulence which scarlet fever and measles have shown in some of the European races, notably in Germany; the immunity of Englishmen to tuberculosis as compared with the American negroes; the slight effect which the use of opium has on the inhabitants of India, who have employed it for centuries, as compared with the more destructive effect which it has on the Chinese, who have used it for a shorter period of time, and the extremely destructive effect which it has when introduced into races who have never used it; the comparative immunity which English-speaking races possess toward alcoholism, as distinguished from the annihilating effects which it has when newly introduced into savage races like the American Indians.

This gradual diminution of virulence has been used as an argument to prove the transmissibility of acquired characters. It should, however, be recognized that many of these diseases do not endow their individual victims with immunity, but rather with greater susceptibility. Individuals who have been afflicted with tuberculosis or typhoid fever do not acquire immunity, and chronic indulgence in alcohol or opium does not establish immunity in an individual towards these poisons, but rather makes him more susceptible to a craving for them. If acquired characters of this kind were transmitted by inheritance, there would be an accumulative inheritance of susceptibility to such an extent that the race would eventually be annihilated. Undoubtedly the gradual acquisition of immunity in a race to a certain disease represents an example of the survival of the fittest. It can be shown that racial immunity to a specific disease is in direct proportion to the experience which the race has had with the disease, and it is supposed that the more susceptible element has gradually been sifted out.

The predisposition to disorders of the nervous system is extremely heritable. This is said to be due to the fact that the nervous organism is the most complex in the body and is, therefore, most easily thrown out of equilibrium. Hamilton interestingly gives as a reason for this susceptibility to disease variation that from an evolutionary standpoint the nervous system is the most recent equipment of the body, and he gives evidence to show that the more recently inherited organs are less stable in the matter of germinal

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variability. A neurotic tendency may appear in the offspring in the same form by which it was expressed in the parent, or it may be expressed differently. For example, some specific form of acute neurosis may appear in the offspring merely as a general neurasthenia, or a deficiency of control, and conversely. The main point to be borne in mind is that the hereditary variation is distinctively a predisposition.

What is called the "inheritance of secondary effects" relates to hereditary changes, which result from direct injury to the germ cells, as, for example, poisoning from alcohol, opium, lead, hydrocyanic acid and nicotine. Examples of the secondary hereditary effects which may result from chronic alcoholism in the parents are insanity, criminality, debility, infantilism, imbecility, structural abnormalities and epilepsy. One record of eighty-three epileptic children showed that sixty were from drunken parents. Experiments of injecting alcohol into eggs have produced actual defects and abnormalities in the offspring. Unquestionably the predisposition to the craving for alcohol is a heritable quality.

### LAW OF FILIAL REGRESSION.

This law relates to the general tendency which highly differentiated species always exhibit to gravitate toward an average mean. We see gifted parents producing common-place children and, on the other hand, unexpectedly gifted children born from under-average parents. Francis Galton studied this tendency to approximate to a mean and reduced his observations to a definite law which he called "Filial Regression." He investigated about one hundred and fifty families with special reference to stature, eye color, temperament, artistic faculty and some forms of disease, and showed statistical evidence to prove that there was in all these respects a constant tendency to regression toward mediocrity, e. g., an unusually tall parent would be likely to have a child less tall than himself, while an unusually short parent would have offspring less short than himself. To quote Galton, "The law of regression tells heavily against the full hereditary transmission of any gift. Only a few out of many children would be likely to differ from mediocrity so widely as their mid-parent, and still fewer would differ as widely as the more exceptional of the two parents. The more bountifully a parent is gifted by nature, the more rare will be his good furtune if he begets a son who will be as richly endowed as himself, and still more so if he has a son who is endowed yet more largely. But the law is even-handed; it levies an equal succession-tax on the transmission of badness as of goodness. If it discourages the extravagant hopes of a gifted parent that his children will inherit all his powers, it no less discountenances extravagant fears that they will inherit all his weakness and disease. It must be clearly understood that there is nothing in these statements to invalidate the general doctrine that the children of a gifted pair are much more likely to be gifted than the children of a mediocre pair. They merely express the fact that the ablest of all the children of a few gifted pairs are not likely to be as gifted as the ablest of all the children of a very great many mediocre pairs. Nor must the fact of regression be supposed to affect the general value of a good stock or the general disadvantage of a bad one. Two gifted members of a poor stock may be personally equivalent to two ordinary members of a good stock, but the children of the former will tend to regress; those of the latter will not."

### THE LAW OF ANCESTRAL INHERITANCE.

If the law of germinal continuity is true, it must be assumed that in the germ plasm of every individual there are condensed the characteristics of a infinite number of ancestors. As Thompson puts it, "The individual inheritance is a mosaic of ancestral contributions." This idea is familiar to all in the frequently seen re-expression of characteristics which were conspicuous in a grandfather or great-grandfather. Galton, in order to make a generalization of this fact, studied the data as to stature and other qualities in man, and as to coat color in Basset hounds, and from these statistics he enunciated the following law, "The two parents between them contribute *on the average* one half of each inherited faculty, each of them contributing one quarter of it. The four grandparents contribute between them one quarter or each of them one sixteenth and so on, the sum of the series, $\frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \frac{1}{16}$, etc., being equal to 1 as it should be." Prof. Karl Pearson repeated Galton's work and practically corroborated his law, although Pearson's fractions differed slightly from Galton's. It is extremely important in considering this law to appreciate that it refers only to the *average* taken from a very large number of cases and that it should not in any case be applied to individuals. The practical application of Galton's two laws of filial regression and ancestral inheritance is obviously of great importance and extremely far reaching. The lack of harmony which exists between these two laws and Mendel's theory of gametic segregation is at once apparent. For an ingenious but reasonable attempt to reconcile the two opposing theories, the reader is referred to Thompson's "Heredity," page 315.

### MENDEL'S LAW.

By far the most interesting and important development in the science of heredity is the extraordinary discovery of certain laws of inheritance in plants by Gregor Mendel in the middle of the last century and their rediscovery after years of oblivion in 1900. Mendel's discovery is claimed to have the same relationship to biology as did Dalton's law of constant proportions to chemistry a century age. Punnett, in commenting on the significance of Mendel's discovery, says: "The superstructure of modern chemistry has been raised upon the foundation of the atom; not otherwise may it be with biology, though here, perforce, the analytical process must be lengthier, both from the complex nature of the material and from the greater time involved in

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experiments on living forms, for, unlike the chemist, the biologist is trammeled by the times and seasons. Nevertheless, the achievements of the last few years are such as to warrant us in looking forward to the time when our progress in the knowledge of the living may bear comparison not unworthily with the science of the things that are without life."

Gregor Mendel was born in 1822 in Austrian Silesia. He became a priest, and eventually became abbot of the monastery at Brünn. He had received special education in physics and in the natural sciences, in which he was greatly interested. It was his hobby to study the laws of inheritance in hybridizing various plants which grew in the garden of the monastery, and chose for his chief experiments the edible pea, which he found especially suitable for his work, as this plant possesses certain constant differentiating characters and admits of easy artificial fertilization.

Mendel discovered that in crossing two species of the pea which had differentiating characters the offspring resembled only one of the parents. In other words, the differentiating character of one parent appeared to completely dominate the differentiating character of the other parent. When, however, the offspring of the two original parents was inbred, some of the offspring retained the dominating character possessed by the parent, while some exhibited that character of the grandparent which did not appear in the second generation. The amazing discovery was also made that in the offspring of the third generation the number of those which showed the dominant character was always in the proportion of 3 to 1, as compared with the number which showed the suppressed character. Mendel then found that those individuals of the third generation which showed the suppressed character bred true to this character indefinitely. He found too that one third of the members of the third generation which showed the dominating character bred true to the dominant character indefinitely, and that the other two thirds bred in the same way as the members of the second generation.

One of Mendel's classical experiments consisted in crossing a variety of pea which always grew tall with a dwarf variety. The result of this cross was a variety of pea which exactly resembled the tall parent. When, however, this pea was inbred, the result was three tall peas to every one dwarf pea. When the dwarf peas of this generation were inbred, they continued to breed true, generation after generation. When, however, the tall peas of the third generation were inbred, one third of them bred tall peas, generation after generation, while the other two thirds acted in exactly the same manner as the tall peas of the second generation, namely, producing tall and short peas in the proportion of 3 to 1. The quality of tallness in this experiment was called by Mendel the *dominant* character, and the quality of dwarfness was called the *recessive*. This experiment may be best understood by the following diagram, in which *D* stands for the dominant character or tallness and *R* stands for the recessive character, or dwarfness.

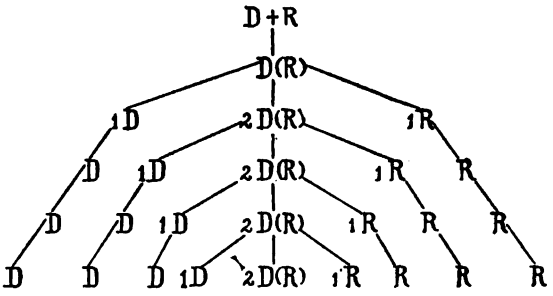


Fig. 2.

The theory which Mendel advanced to explain the results of these experiments was called by him the law of *gametic segregation*. He assumed that when the male *D* and the female *R* gametic cells unite, every cell of the hybrid will contain both *D* and *R*, in which case one dominates, namely, *D*, giving *D* (*R*).

If we assume that in the gametic cells of the hybrid the characters *D* and *R* separate again and go to different cells, half of the gametic cells will contain one character only and the other half the other character. This is supposed to take place both in the male and female individuals. The male gametic cells containing *D* may meet egg cells containing *D* or *R*, and, conversely, the male cells *R* may meet the egg cells *D* or *R*. The possible combinations that may result are shown in the following diagram.

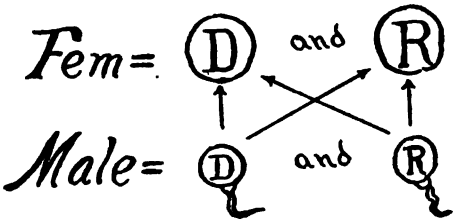


Fig. 3.

There will be two chances of *D* and R uniting to one of *D* and *D*, and one of *R* and *R*. Hence the proportion 1*DD*: 2*D* (*R*): 1*RR*.

Thus it will be seen that Mendel assumed that there were *two kinds of gametic cells* in the hybrid. This theory has stood the test of various experiments, and it is now generally accepted, although it appears to contradict some of the theories of heredity still in vogue. The point of practical importance in Mendel's theory is that perfectly pure bred individuals may be sifted out in future generations from cross-bred ancestors.

The elaborate work of Mendel, of which the experiment here described is only a sample, was published in the proceedings of a local scientific society in 1865. It attracted almost no attention and did not even come to the notice of Darwin, to whom it would have been of incalculable assistance. In the year 1900 the celebrated botanist Hugo DeVries, working independently, and two investigators, Correns and Tschermak, rediscovered the same law, and it was then that Mendel's extraordinary work came to light.

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Numerous experiments to test the validity of Mendel's law have since then been carried out, both in plants and in animals, and it has been sufficiently well shown that the law constitutes a definite basis for what is expected to become an exact science, and that it may justly be compared with the law of constant proportions in chemistry. Attempts to apply the Mendelian law to the human race have so far with a few exceptions met with failure. This failure is doubtless due to the extreme complexity involved in human inheritance and to the difficulty in sifting out or analyzing pure unit characters, in addition to the obvious difficulties that stand in the way of experimental breeding.

A few cases where the Mendelian law has been found to work in the human race have been recorded. The two most celebrated examples are one of brachydactylism, and one of night-blindness, The case of night-blindness apparently started as a mutation in a woman who lived in the middle of the seventeenth century. The descendants of this woman, to the number of two thousand, have been carefully traced, and the occurrence of night-blindness has followed closely the Mendelian law.

The following is an example of where the Mendelian law has been put to practical use. Certain forms of wheat are susceptible to the attacks of a fungus which causes the disease called wheat rust, while other forms of wheat are immune. It has been discovered that when the susceptible and the immune forms are crossed, the resulting hybrids are all susceptible to rust, thus susceptibility is, in Mendelian language, the "dominant," while immunity is the "recessive," factor. On self fertilization the hybrids produce seed from which appear susceptible and immune offspring in the proportion of 3 to 1. The immune seeds may, then, be selected out and breed true to immunity for successive generations. Other examples could be cited which show that from impure ancestors a permanently pure breed with regard to a certain quality may be sifted out.

### EUGENICS.

The term "eugenics" relates to the improved breeding of the human race. The recent advances which have been made in the knowledge of heredity have awakened interest in the possible artificial improvement of the human race, an idea which dates back to Spartan civilization. Statistics would seem to show that the human race, though rapidly increasing in quantity, is as regards quality tending to breed downwards rather than upwards. It has been shown that there is a greater increase of population among the less desirable element of humanity than among the more elevated strata, and it has also been stated that in all probability the heritable characters of the better element will not eventually be able to dominate the less desirable characters of the lower element. Eugenists foresee an inevitable gradual deterioration of the human race. To prevent this future disaster propositions have been made aiming toward a strict regulation of marriages by law in order to prevent the propagation of unfit individuals. The present complex systems of education and betterment of the human race relate only to the improvement of individuals as they exist, but as the individual transmits only the inborn characters of his germ-plasm, each new individual starts where his parents began and the labors of the preceding generation, though improving his environment, have been of no influence in bettering his natural heritage. As Punnett says: "Education is to man what manure is to the pea. The educated are in themselves the better for it, but their experience will alter not one jot the irrevocable nature of their offspring. Permanent progress is a question of breeding rather than of pedagogics; a matter of gametes, not of training. As our knowledge of heredity clears, and the mists of superstition are dispelled, there grows upon us with an ever-increasing and relentless force the conviction that the creature is not made but born."

Although the average individual in contemplating the progress which the human race appears to be making fails to be greatly impressed with the fears of the more enthusiastic eugenists that the human stock is in a process of mental and physical deterioration, nevertheless it must be granted that there is great reasonableness in many of their views purely from a philanthropic standpoint. It would seem reasonable and feasible even with our present ideas of marriage and human liberty to prevent by law the propagation of criminals, imbeciles, the insane and the actively tubercular and syphilitic. The idea of improving the human race by proper breeding does not in any way conflict with the present ideas of combatting disease and of bettering conditions of the under classes by education and hygienic science. The eugenist believes that such education and careful nurture when applied to the under-average strata of humanity must be coupled with restrictions as to the propagation of their kind in order not to produce eventually an overwhelming amount of deficient stock. It is inevitable that in the course of time eugenistic laws restricting the marriage of the unfit will be enacted, though to what extent it is impossible at present to foresee. A few laws of this nature already exist and prove the feasibility of the movement. When these laws become more general, as in all probability they will within the present generation, the grave responsibility of deciding between the fit and the unfit will rest upon the shoulders of the medical profession, and for that reason it becomes incumbent on the physician to familiarize himself with the important and rapidly progressing science of heredity.

## POST-OPERATIVE PSYCHOSES.*

BY JAMES G. MUMFORD, M.D., BOSTON.

SOME years ago I had occasion to look up a large consecutive group of patients operated upon at the Massachusetts General Hospital seven and nine years previously. The purpose of this research was to ascertain what might be their mental

* A paper read before the Philadelphia College of Physicians, Nov. 2, 1910.

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condition in relation to the operation, and their present effectiveness as compared with their effectiveness previously. The result of this research impressed me with the fact that we, as surgeons, are regarding too little, perhaps, that condition which Goldthwait has called the ultimate prognosis.

The experienced surgeon of reflective temperament probably considers the psychic elements in his cases, but I doubt if we are aware always how deeply significant those elements may be in controlling the return to health of a surgical patient. Rather are we wont to accept the patient from the hands of his physician; to shrug, perhaps, at what we are pleased to call his neurotic state; to proceed with the operation, if the obvious lesion warrants it; then, with an anatomical cure established, to shift the patient back upon the weary physician for the tedious struggle to health.

I do not maintain that we should refuse to operate upon such discouraging cases. On the contrary, I believe, as Dr. J. W. White long ago taught, that such operations — the operation *per se* — do great good and are important therapeutic measures. My thesis is that we should appreciate clearly the types of individuals liable to suffer from post-operative psychic disturbances, and the surprisingly large number of such persons, and that we should perform the operations of intelligent purpose; and, most of all, that we should recognize our ability to aid in the after-treatment and should bear our share of its responsibility. A competent and experienced dentist has recently stated that he can do little efficient dental work, on his best patients even, within a year after they have experienced any surgical operation. Their psychic equilibrium is so unsettled that they shrink from the slightest manipulation, and must be carried over the year by mild palliative measures.

Let us consider for a moment the significance of certain clinical terms. What is the meaning of the words *cure, anatomical cure, psychical result?* I take it that a cure is the important end of all therapeutic endeavor. A perfect cure is the *summum bonum*, but is it not true that a large proportion of our cures are relative only? The man with a disabling, recurrent appendicitis is absolutely cured of all pain and digestive disturbance through the removal of his appendix. The man with gangrene of the foot is relatively cured by amputation, though he be left maimed and halting. The woman with an ovarian cyst enjoys an anatomical cure when the tumor has been excised and the wound has healed kindly and soundly, though an unessential organ has been removed.

All these are clinical cures, are cures from the surgeon's point of view; but just here there enters into the problem an element of wide-reaching metaphysical significance. The ills of life, like all the so-called facts of life, are in direct relation and are proportionate to our experiences. The man who has just lost his appendix, if he lacks poise and clear vision, feels that he has been through a grievous crisis, that he has suffered a great calamity in the operation, that the sanctity of his vitals has been violated and that he can never again be what he was. Many persons hold that view, I find. The man who has lost his foot may find little comfort in his freedom from pain and impending death; his old life is gone; he must readjust himself to new circumstances of existence; his relations to his environment must be recast; he must limp, a cripple, through the remainder of his life, bearing with him an unsightly stump and a grievous scar to fret and distress him. The woman whose ovary was removed, useless though that ovary may have been, believes herself to have been unsexed. She has heard tales of changes of temperament, of coarsening features, of mannish tendencies, or perhaps she thinks a full set of ovaries essential to sound health and the bearing of womanly cares. She looks forward to some mysterious, ill-defined change in herself, or to invalidism, and the reassuring farewell words of the surgeon fail to turn her from the expected melancholy course. Strong character and optimism are needed to overcome these tendencies of environment and condition, unless aid be brought from outside sources.

How, then, shall we define a *cure?* I protest that a cure consists only in returning a man to that state of mental and physical health which shall enable him to live his life, to accomplish his wonted work, to adapt himself to his environment in vigor of body and in freedom from pain, with his normal functions undisturbed, with his mind unclouded, buoyant, assertive. That is the perfect cure, but it is a cure not easy of attainment. A more common and reasonable cure is a state of relative comfort and efficiency, with little pain and distress, with infrequent anxiety, with renewed, if imperfect, confidence in the bodily powers.

By the term *anatomical cure* we imply a sound wound healing and a restoration of the bodily functions, so far as such restoration may be compatible with the loss of, or damage to, members and organs.

*Psychical results* are related to the subjective mind. Their bearing upon the cure concerns the patient, not in proportion to anatomical perfection or potential physical and intellectual capacity, but rather to what he himself feels to be his perfection or capacity; and just in so far as his objective intelligence is feeble, or has become enfeebled, just so far is he fated, on the one hand, to remain a wreck, or, on the other hand, to refit his shattered existence. We must teach ourselves to look to the ultimate prognosis; it is not what we are, it is what we think ourselves to be; that is the sum total of the old argument.

I have spoken of the enfeeblement of the objective intelligence. Such enfeeblement has commonly been referred to as a neurotic condition, and has been regarded often as a state of mind for which the patient is in large measure responsible. In the language of the street, we speak of such persons as lacking in nerve or in pluck, and we are wont to assume towards them an attitude of more or less modified contempt. I believe that

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such an attitude on our part is in many instances unjustified, and that through the researches of Crile and his associates we may find excellent anatomical reasons for this depressed mental condition. It would be unprofitable for me here to rehearse the striking and instructive experiments conducted in Crile's laboratories, but one may profitably glance at and sum up some of his conclusions: In a word, he finds that animals and patients, the victims of both mental and physical assaults, suffer quite similar degenerative changes in the structure of the nerve cells in all parts of the brain, and in their reaction to the Nissl stain as well. These changes in the nerve cells include changes in the absolute size of the cells, in the size reaction of the nucleus and plasma, in the membrane surrounding the cell, in the membrane surrounding the nucleus, and finally in the general contour of the cell itself. The cell increases in bulk — from a slight variation to eight times the normal even. In the normal cell there is a definite relation between the size of the nucleus and the remainder of the cell. After operative assault or mental shock the nucleus becomes relatively larger. In the normal cell the surrounding membrane, as well as the membrane surrounding the nucleus, always presents an unbroken continuity. After assault these membranes may be extensively ruptured, so that the cell becomes greatly distorted. In extreme cases the cell loses completely its contour and presents the appearance of a disorganized mass of protoplasm. Furthermore, there are certain notable changes in these cells in their relation to staining. When first assaulted they show an increase in the amount of Nissl stain which they are capable of absorbing; later, as the degree of shock is increased, the amount of reaction to the stain diminishes, so that in the final stages little or no staining is found. Crile observes, however, that in fatal cases, even, all of the cells are not invariably thus altered.

Observe, then, this striking conclusion; on morphological grounds, when shock has broken down the nucleus, the nucleolus and the cell body, so that there remains a mere mass of protoplasm, we must regard the cell as almost certainly dead and incapable of regeneration. The gravity of any physical or mental shock in a given case is indicated, accordingly, by the percentage of brain cells which are thus broken down and virtually killed. The damage done by purely physical trauma is manifest in the destruction of cells in the cortex, in the cerebellum and in the medulla. The cells of the spinal cord are modified little or not at all.

Hertwig, Howard and others, in their studies of unicellular organisms, have shown that in fatigue, overwork and starvation the principal change in the cell is in the nucleus-plasma relation. Crile and his workers have shown that after various physical damage and disease the brain cells obey the same law of change. They find the same changes present as the result of overwork, anemia, infections, drug poisons, shock, fear and anxiety. In acute anemia — and the same is true of fear, fright and worry — we find brain changes varying from temporary hyperchromatism through every stage down to the death of the cell itself. The potential energy of the cell is soon used up. If the effort of the organism does not result in an efficient circulation through the brain and in consequent restimulation of the cell, the patient must suffer collapse, permanent impairment and possibly death. This is a fact of great clinical importance.

Allow me to rehearse an instructive laboratory operation on the intestines by Crile, which resulted in extensive damage to the cells of the cerebral cortex. One can well see that such secondary damage to the cortex might result in prolonged, or even in permanent, impairment of the intellectual and moral vigor of the individual. In a study of intestinal gangrene Crile found that after a certain number of hours of total exclusion of the blood supply the intestine became gangrenous. On his releasing the obstruction the animals soon died, even with the re-establishment of the circulation. If the circulation was not re-established, the animals died also, but later. Even when a preliminary entero-enterostomy had been made, and the isolated coil of intestine was used for the experiment, still death occurred. As a rule there was no peritonitis, and death took place in from twelve to twenty-four hours. If a complete resection of the gangrenous segment was made, death nevertheless occurred in about the same time, but by his making an external drain in the loop of intestine he saved the animal. These results were explained at once by injecting a very small quantity of the juice of the gangrenous coil subcutaneously into a sound animal. Even when the material was injected by a hypodermic needle into the lumen of the uncontaminated bowel, serious illness or death followed, the symptoms being precisely those which resulted from resection for gangrene of the bowel in man. As the experimenter remarks, the coincident widespread impairment of the animal's brain cells told the entire story. Undoubtedly, even at the time of operation in man for gangrene of the bowel, a sufficient amount of toxins has already been absorbed and fixed in the brain cells to cause death; or if there have not been toxins enough, death is made more certain through the amount of poison squeezed into the circulation by manipulation of the gangrenous gut. Patients become severely ill, or die, or remain neurotic invalids, not from the immediate damage to the traumatized part, therefore, but through the more or less permanent damage to the cerebral cortex, as the result of the absorption of toxins. Such an infection as this suggests the rôle which infection plays in ultimate surgical risks. It explains also the slow convalescence in cases of ruptured appendix, with peritonitis, as compared with clean cases. Is it not probable, therefore, that the gross lesions in the abdomen are of less importance to the patient, for life or for perfect recovery, than are the microscopic lesions in the brain?

We have seen, accordingly, and our experience teaches, that many persons subject to physical and mental assaults — to what we call trauma-

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tism and to shock — receive serious mental impressions, which can be demonstrated clinically through searching our records, and can be demonstrated anatomically through the examination of the brains of experimental animals and of patients who have died as a result of some form of physical or mental shock. The clinical evidence of disturbed mental equilibrium is familiar to all surgeons, and my researches show me that such mental disturbance is especially liable to ensue after operations on the generative organs of both men and women when those organs have not been actually removed, but have been so tampered with that the patient lives on in dread of their loss at some future time. For example, operations for varicocele and hydrocele are followed by more pronounced and prolonged neuroses than is the operation of orchidectomy. The operations of suspension of the uterus or repair of the perineum frequently leave behind them trains of mental depression more serious than do the operation of ovariotomy, or even of hysterectomy. The explanation in this case seems to be that those deprived of important organs are able to readjust themselves to a positive calamity more readily than are those patients who continue an existence of anxiety regarding a possible future calamity.

A series of investigations by Crile is now in progress on the effects of disturbed functionating of the ductless glands, and so far as this investigation has gone we seem justified in assuming the hypothesis that the ductless glands, — the thyroid, the hypophysis, the suprarenals and the ovaries, — when overstimulated, bring about directly a disturbance or partial destruction of the nerve cells of the brain. We are familiar with the physiological fact that the ductless glands are capable of stimulation through what we call mental impressions, so that, to take a concrete example, we illustrate the circle in some such fashion as this: Excessive fright or anxiety may be the initial cause for a development of the thyroid leading to Graves' disease; Graves' disease results in a more or less continuous intoxication of the whole organism; these toxins bring about a progressive disorganization of certain nerve cells in the brain, and the more advanced becomes this disorganization, the more long-continued or permanent becomes the depressing effect upon what we call the mind as well as upon the functions and the physical capacity of the individual.

In view of this situation, it behooves surgeons to provide in every way possible against adding physical and mental traumata to their patients. This proposition in itself opens a field of wide speculation and interest and of the greatest practical importance. We must endeavor to guard against mental shock by surrounding the patient with appropriate psychic influences, and to guard against physical shock by limiting our operative manipulations to the least possible traumata of the parts involved; and we must employ our anesthetics judiciously and appropriately. Our conduct of convalescence must be made more painstaking, more optimistic and more prolonged. We must impress upon the patient the certainty of his return to perfect health; we must eliminate a needless repetition of painful dressings, which so frequently lead through summation to a depressing dread of the surgeon's visit; and after the wound is healed and the patient leaves his bed we should continue, through ourselves, our associates and the patient's family physician, a constant and sustained attitude of optimism and encouragement to take up and practice the familiar duties and experiences of a well-regulated and normal life.

## Clinical Department.

### A CASE OF MYXO-FIBROSARCOMA ORIGINATING IN THE GREAT OMENTUM WITH INVOLVEMENT OF THE BLADDER AND SMALL INTESTINE.

BY HUGH CABOT, M.D., BOSTON.

This case is reported on account of its rather unusual character and as showing how apparently hopeless growths may at times be found curable by operation.

H. F., Jew, twenty-seven years. Came to the Massachusetts General Hospital Nov. 1, 1909, on account of hematuria. One year ago noticed blood in the urine for a few days. Since that time has had transient attacks of hematuria without pain or bladder irritation. Four months ago first noticed a tumor in the lower abdomen the size of a hen's egg. This has grown rapidly up to the present time. Feels perfectly well and thinks he has lost no weight.

*Physical examination.* — Thin, poorly developed young man. Examination entirely negative except for abdomen, where there is a tumor rising from the pelvis, filling the space between the umbilicus and pubes and much resembling a uterine fibroid. Its surface was roughly lobulated and it was slightly movable from side to side. Not tender to pressure. Rectal examination negative.

*Urinary examination.* — Bloody, acid, albumen slight trace. Sediment: Blood and occasional squamous cells.

*Cystoscopy.* — Bladder holds 9 oz. Mucous membrane is normal except on the roof, where a mass protrudes into the bladder showing a deep cleft in its center, which is red and ulcerated.

Nov. 16. Operation. Six-inch median incision. The tumor proved to be a solid lobulated mass, the size of a child's head, covered by the great omentum, from which it obtained its blood supply. Its lower portion was adherent to the dome of the bladder, while at its upper and right side a portion of the small intestine just above the ileocecal valve was included in the growth. The omentum was tied off in sections along the lower border of the transverse colon and divided, allowing the tumor to be delivered from the abdomen. The small intestine was then clamped, allowing a liberal margin above and below the growth, and divided, leaving a piece of the intestine about eight inches long adherent to the tumor, which was then free except for its attachment to the bladder.

A piece of the dome of the bladder about three inches in diameter was then removed, thus allowing a liberal margin about the growth. The bladder was closed with interrupted catgut sutures through the mucous mem-

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brane and muscular coat, and a continuous suture through the peritoneum.

The divided ends of the small intestine were united by end-to-end suture in two layers, the inner with catgut and the outer of Pagenstecher. The gap in the mesentory closed by suture.

A somewhat adherent appendix was then removed and the abdomen closed in layers, leaving a small cigarette drain in pelvis. The bladder was drained with an inlying soft rubber catheter.

There was some reaction on the second day after operation, with moderate distention, some vomiting and a rather rapid pulse. This quickly subsided and he made a rapid recovery. Catheter was removed on the fourth day and bladder gave no trouble.

Feb. 5, 1910. Patient reports to-day having been at work for six weeks. He seems to be entirely well. Urine is normal, scar firm.

*Pathological report.* — A deeply multilobuated soft, semi-opaque growth 15 cm. in diameter. On one side was a pouch from the bladder 3 cm. deep about which was thickened fibrous tissue. The peritoneum was separated for a considerable distance from the bladder so as to include an area of 5 by 15 cm. in width with the other pouch as a center. Over a considerable portion of the tumor the omentum was thinned out and dipped deeply in between the lobules. On the opposite side from the bladder the tumor was attached to the small intestine by a pedicle 5 by 7.5 cm. along the surface of the intestine. There were several nodules under the peritoneum which had not broken through the mucous membrane. Eleven centimeters of the small intestine had been excised after the growth was removed.

Section of the growth was homogeneous, grayish and semi-translucent.

Microscopic examination showed bundles of elongated spindle-shaped cells alternating with bundles of semi-fibrous character. In places the cells had the shape and appearance of smooth muscular fibers.

Myxo-fibrosarcoma.

Appendix slightly thickened, otherwise not remarkable.

## Reports of Societies.

### COLLEGE OF PHYSICIANS OF PHILADELPHIA.

MEETING OF WEDNESDAY, NOV. 2, 1910.

The President, DR. GEORGE E. DE SCHWEINITZ, in the chair.

#### CONCERNING NERVOUS DISTURBANCES FOLLOWING SURGICAL OPERATIONS AND ANESTHESIAS.

DR. S. WEIR MITCHELL: In a case of grave hysteria following operation we must consider the patient as a gun already loaded, and that the surgeon merely pulls the trigger. The proper man might know that the gun is loaded. This raises the question whether it is not desirable in many cases to prepare the patient for the operation more often than our surgical brothers seem to think is needed? Not only the risks of death are to be considered, but the possibility of increasing a preceding condition disease. Many physicians have felt that there is necessity for more strictly dealing with the before and after of surgical cases. I shall limit myself to the consideration of the effect on bodily resistance caused by diet and point out the extraordinary effect on the irritability of the bladder produced by a strictly milk diet. So satisfied was Sir James Paget upon this point that he never did a grave operation on the bladder without putting the patient under a fortnight of milk treatment. I am tempted to say that no operation ought to be done without obedience to the rule in St. Bartholomew's Hospital in London, that no surgeon should ever dare to operate on a patient except after consultation with two physicians. Personally, I should not be selfish enough to insist on two, if I were one.

#### POST-OPERATIVE PSYCHOSES.[1]

DR. JAMES G. MUMFORD, Boston: The frequency of post-operative psychoses is shown by the careful study of cases seven and nine years after operation, taken from consecutive reports in hospital records. The significance of the words *cure*, *anatomical cure* and *psychical results* is discussed. The attempt is made to show that long-continued mental and psychical disturbances following operations are due to demonstrable microscopic changes in certain nerve cells of the brain. The significance of these nerve-cell changes is discussed, together with the method of their production and reasonable measures which may be taken to limit such changes.

#### THE DIAGNOSIS OF THE POST-OPERATIVE PSYCHOSES.

DR. J. CHALMERS DACOSTA: All sorts of mental disturbance may follow a surgical operation. It is certain that genuine insanity may arise after an operation, though it is seldom met with. Post-operative insanity is more common in women than in men and less common in children than in adults. Contributory causes are pain, insomnia and shock. In all cases of post-operative insanity there is predisposition, hereditary or acquired. A normal, stable brain will probably never go insane after operation unless that operation attack the brain, testicles or ovaries. The anesthetic is usually the exciting cause in insanity coming on immediately after the operation. The commonest type of post-operative insanity is confusional insanity. Fear and worry are two important causal factors. Ante-operation fear may become a post-operative phobia, yet I do not believe that fear or sudden fright is usually responsible for post-operative insanity. Most people go to the operating room with reasonable calmness, many with heroic courage, and some with satisfaction at the prospect. Delirium may be mistaken for insanity, and is far more common, from intoxication or infection, than organic brain disease. The entire subject of post-operative psychoses is one of extreme interest and importance.

#### POST-OPERATIVE INSANITIES.

DR. EDWARD N. BRUSH, of Towson, Md.: It may be assumed that there is no such thing as post-operative insanity *per se*. Insanity follows operations sometimes, but it manifests itself in various forms. The personal and family history in a given case are so difficult to obtain that we are not at all sure how far mental instability plays a part. This naturally arises from the lack of clinical experience in psychiatry on the part of many observers of these cases. Quite a large proportion of post-operative insanities are due to sepsis, not necessarily from faulty technic on the part of the surgeon. I have knowledge of a woman of unstable mental equilibrium who became insane after the administration of gas for the extraction of teeth and who remained insane for several months. Before we can study intelligently post-operative mental disturbances we must have the histories of our patients carefully recorded. From the lack of this knowledge the post-operative insanity is often erroneously attributed to the operation when in reality the condition may have been present preceding operation.

[1] The paper is printed in full in this issue of the JOURNAL, see p. 838.

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DISCUSSION.

Dr. Howard A. Kelly, Baltimore (discussion presented by manuscript in Dr. Kelly's absence): Post-operative psychoses I believe are due to the mental shock of the operation *per se* and not necessarily to any particular kind of operation. The duration and severity of the procedure are minor factors. The condition is due rather to the attitude of intense expectancy, even of dread, inspired by a new and untried force with which the patient feels she has to cope. It is important that the physician should be able to inspire the patient with confidence sufficiently to enable her to feel that he is a moral support. The conditions after operation should be as natural as possible and the patient should be out in the sunlight upon the porch when practicable. Treatment should be prophylactic in determining the predisposing factors. The utmost care should be taken to minimize the unpleasantness of the operation.

Dr. Edward Martin: I think every surgeon in the room feels that when Dr. Mitchell said, "The surgeon pulled the trigger," he practically covered the whole subject.

We do not recognize that a perfectly healthy individual in good mental health can be made insane by any form of surgical intervention practiced at the present day. We do recognize certain post-operative mental disturbances as rather common. We see the type of depression which we call "hospitalism," of which the patient is cured by being sent out of the hospital. We see the type of homesickness, and again the patient is cured by being sent home. We do not see the type mentioned by Dr. Mumford in which the patient is depressed by the thought of loss of organs, and broods upon a physical deformity.

Dr. Francis X. Dercum: The great rôle played by neuropathy in post-operative mental disturbances should discourage operation in such subjects except under circumstances of grave necessity.

Dr. John K. Mitchell: Of 344 cases of general mental or nervous disturbances, there were only 31 cases which could be called post-operative. There seemed to be no relation between the severity of the operation and the severity of the mental disturbance. Fright, I feel sure, plays a larger part than is generally attributed to it. There are good surgical reasons for getting a patient out of bed as soon as possible, but these troubles would be less frequent if the period of rest in bed were increased and general treatment instituted. Should the question of surgical treatment of a neurasthenic patient arise, much more than ordinary care must be observed in deciding upon operation.

Dr. Charles K. Mills: Of many serious cranial operations under my observation I can recall perhaps only two or three in which insanity has followed the procedure. There have been very few also following operations upon the spinal cord. In my experience these insanities have occurred in women of a certain temperament and of a certain predisposition rather than in the neurasthenic type.

Dr. S. Weir Mitchell, closing: The question arises concerning the result of the use of local anesthesia which has become so fashionable in some circles. I hear of abdominal operations done under local anesthesia. I think to have the interior of one's abdomen exposed to one's own view would tend as much as possible to produce some of the insanities of which we have been speaking. It is a fact that occasionally insanities have been cured by grave operations. One such case was an amputation. Another was an attempt on a man's part to cut his throat. The man bled almost to the point of death, but his life was saved, and he recovered from his insanity. I don't recommend the method. The greatest of surgeons known to me is the surgeon called "War," and I have seen many cases in which sudden delirium or sudden delusion followed instantly upon a gunshot wound. One case was that of a colonel who, after being shot, cried to his men to run, that the rebels were upon them. He fell to his face, was delirious for some time, but, after amputation of his arm, he returned to the regiment that evening. Another case was that of an officer in the Mexican War, a man of well-known courage. A ball struck his heel; he limped up and down the line calling to his men to run, that everybody was going to die, and for hours he was in a condition of the wildest maniacal excitement. This passed away within forty-eight hours. He asked for a court of inquiry, which, of course, was denied a man so well known for courage.

## Book Reviews.

*Founders' Week Memorial Volume.* Edited by Frederick P. Henry, A.M., M.D. Published by the city of Philadelphia in commemoration of the two hundred and twenty-fifth anniversary of its founding. Philadelphia: 1909.

This volume contains an account of the celebration of the two hundred and twenty-fifth anniversary of the founding of the city of Philadelphia, and "histories of its principal scientific institutions, medical colleges and hospitals." It is a compliment to the editor, not lack of appreciation of his labors, to say that the most interesting part of his work is his epigrammatic preface. The book is a useful compilation of valuable historic data about the many charitable, scientific and medical institutions and enterprises which have justly made Philadelphia famous in the past, and still distinguish her in the present. The illustrations, though not beautiful, are well adapted to their purpose of supplying information. The volume should be a serviceable work of reference for those interested in the history of the city and her activities.

*Practical Points in Nursing.* For Nurses in Private Practice. With an Appendix containing Rules for Feeding the Sick; Receipts for Invalid Foods and Beverages; Weights and Measures; Dose List; and a Full Glossary of Medical Terms and Nursing Treatment. By Emily A. M. Stoney. Fourth edition, thoroughly revised. Containing 97 text illustrations and 8 colored and half-tone plates. Philadelphia and London: W. B. Saunders Company. 1910.

This new edition of Miss Stoney's well-known book on nursing presents a large amount of fresh material incorporated with the excellent substance of the original. The illustrations are numerous and in the main good. The volume should continue to be a popular and valuable textbook for training-schools and for nurses in private work.

*Diseases of the Colon and Their Surgical Treatment.* (Founded on the Jacksonian Essay for 1909.) By P. Lockhart Mummery, F.R.C.S. Eng., B.A., M.B., B.C. Cantab.; Jacksonian Prizeman and late Hunterian Professor, Royal

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College of Surgeons; Senior Assistant Surgeon, St. Mark's Hospital for Cancer, Fistula and Other Diseases of the Rectum, etc. Illustrated by colored and other plates and numerous figures in the text, many of which are reproduced from the author's sketches. New York: William Wood & Co. 1910.

This little book of three hundred and seventeen closely printed pages is founded upon the author's Jacksonian prize essay, awarded by the Royal College of Surgeons in 1909. It is a most useful and informing handbook. The subject of diseases of the colon is not altogether so recently developed as he implies in his preface. Nevertheless, much bad work is still being done in colon surgery, and much misinformation still is current regarding this organ. Mummery takes up his subject systematically, and deals with the colon's anatomy, functions and diseases in proper sequence, winding up with excellent chapters on colon operations. He is not in accord with those writers who regard the colon as of small importance to the organism. He reminds us that the absorption of water takes place mainly in the colon, so that elimination of the colon is wont to result in chronic diarrhea and a chronic thirst. He points out also the danger of leaving blind pouches when operating on the colon, since these pouches, through retro-peristalsis, become filled with hardened fecal masses which act as a source of auto-intoxication and mechanical injury.

Among a multitude of interesting paragraphs we read of the best methods of examining the colon; of post-operative complications; of such lesions as kinking, relieved by properly applied massage; of ptosis and its treatment; much of mucous colitis, for which the author advocates appendicostomy; of antero-spasm; of diverticulitis, which is forcing itself more and more on our attention; much of chronic constipation, in regard to which he discusses Arbuthnot Lane's method of ablation of the colon, and with a note of distrust; and at length, of the great subject of tumors of the colon. The book is admirably written, is extremely suggestive and is well worth study alike by physicians and by surgeons.

*Physiology and Pathology of the Semicircular Canals.* Being an Excerpt of the Clinical Studies of Dr. Robert Barany, with Notes and Addenda gathered from the Vienna Clinica. By ADOLPH E. IBERSHOFF, M.D., and a Foreword by ROBERT S. COPELAND, M.D. Pp. 64. New York: Paul B. Hoeber.

This is a small book of 64 pages. The title and the following extract from the foreword accurately set forth the nature and the purpose of the book: "Since the publication by Ewald and Hoegyes of their epoch-making experiments on the semicircular canals of animals, and the discovery of the underlying laws of labyrinthine physiology, extensive researches have been conducted at the clinics of Vienna and Berlin on the human labyrinth. While the latter have been supplemental to the classical work of the above-named pioneers, they have served to reduce the subject to a practical basis and to evolve a new and valuable method of diagnosis of conditions hitherto obscure. Nystagmus, which until recent years has been associated almost entirely with congenital or early acquired optical defects, or in an indefinate way with lesions of the inner ear, has become one of the most important aids in differential diagnosis, and greatly amplified the scope and efficiency of the aurist.

"With the exception of a few contributions to our medical journals by men who have recently visited the Vienna clinica, this is the first attempt to present the subject in detail to the English-speaking profession."

After discussing the anatomy and the physiology of the semicircular canals, the writer takes up nystagmus and describes the methods of determining it in the normal and in the pathological labyrinth. The tests by which nystagmus can be elicited, namely, the caloric tests and the turning tests, are clearly given and their physiology clearly explained. The subject of labyrinthine vertigo is also given concisely and clearly.

The differential diagnosis of the labyrinthine conditions and the operative measures indicated are given. The book ends with a set of tables condensed from Mackenzie. These give in parallel columns the differential points necessary in distinguishing labyrinthine suppuration, peri-labyrinthitis, neuritis of the eight nerve and cerebellar abscess.

This book is a timely and valuable one. As the writer says, it is one of the first, if not the first, to give this puzzling subject in English. The usefulness of the book would be increased and the subject made more complete if the writer had added a discussion of nystagmus and vertigo in diseases of the cerebellum.

*Dawn of the Fourth Era in Surgery, and Other Short Articles.* By ROBERT T. MORRIS, M.D., Professor of Surgery, New York Post-Graduate Medical School and Hospital. 12mo. Pp. 145. Philadelphia and London: W. B. Saunders Company. 1910.

Morris's writing is always stimulating and suggestive. He has sometimes been criticised for undue vigor of statement, for exaggerating minor matters and for loudly crying down methods and teachings which do not meet with his hasty and somewhat boisterous sympathies. These criticisms may possibly express the views of impatient conventionalists only. At any rate, the little book before us is full of good reading. The author has collected in a convenient pocket-volume his most important journal essays of the past five years: that paper which he calls the Physiologic Era in Surgery, his description of various diagnostic points on the abdominal wall, the papers on the appendix, on surgical cleanliness, et cetera. The essays are written in a popular and picturesque style, and for the larger medical public. Doubtless they may at times lead astray the unwary and inexperienced, but who admits himself to be inexperienced or unwary?

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THE BOSTON

# Medical and Surgical Journal.

THURSDAY, DECEMBER 1, 1910

*A Journal of Medicine, Surgery and Allied Sciences, published at Boston, weekly, by the undersigned.*

SUBSCRIPTION TERMS: $5.00 *per year, in advance, postage paid, for the United States, Canada and Mexico;* $6.50 *per year for all foreign countries belonging to the Postal Union.*

*All communications for the Editor, and all books for review, should be addressed to the Editor of the Boston Medical and Surgical Journal,* 309 *Paddock Building,* 101 *Tremont Street, Boston.*

*All letters containing business communications, or referring to the publication, subscription or advertising department of this Journal, should be addressed to the undersigned.*

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101 TREMONT STREET, BOSTON, MASS.

## OUR HETEROGENEOUS URBANIZED POPULATION.

THE work of the census is nearing completion, and though it is still too soon to draw definite conclusions, certain inferences from it seem fairly warrantable. The total population of the United States, including the Philippine Islands and Porto Rico, is approximately 104 millions; that of the United States alone is about 93 million, as against 76 million ten years ago, representing an increase of about 22%. This sounds gratifying; but when it is remembered that this increase is largely by annexation and immigration, that our native birth-rate is rapidly declining, and our shores filled with swarming alien hordes not fundamentally in sympathy with our racial institutions and ideals, the prospect seems less pleasing. Our country is to-day in the situation of a highly gorged anaconda, replete with heterogeneous material. Can this indiscriminate mass be assimilated? Can our racial genius so leaven the nations as to fashion them all to our form and substance? These are the questions which we face with our unabsorbed and seemingly unabsorbable millions. Nothing but the spirit which can solve these "in the teeth of all the schools, will save us at the last."

Another very striking aspect of our growth in the past ten years is the increase of large cities. We now have 50 cities with a population of 100,000 or more, and nearly a third of our people live in cities of over 25,000. New York City alone contains more people than the rest of New York state. This urbanization of population is not peculiar to the United States. It is characteristic of all modern civilizations. With it goes all that city life implies of bad hygienic environment, nervous wear and tear, and moral degradation. With it also go all the advantages and opportunities for progress and splendid achievement which are possible only in corporate urban society. The conclusion is one neither of elation nor of pessimism. The result of the census shows that we are following natural paths of evolution. If we would have a high civilization, we must be prepared to pay for it, and it can be purchased only at the cost of an urbanized population which makes its necessary activities possible. Man's instinct for aggregation is perhaps representative of the primitive impulse that brought the myriad component cells of his being into symbiosis. Moreover, there are positive elements of encouragement. If our population is urbanized, it is also suburbanized. Our cities have spread their limits proportionately more than they have swelled their numbers, with the result that many now who are officially city-dwellers have many of the blessings of country life. This combination of the two is, perhaps, the keynote of our solution. So far as hygienic environment goes, too, our cities are fully as healthful as many country districts, as is proved by their water supplies, their watchful prophylaxis of disease, their low death-rates. The alertness of the medical profession is one of our greatest guarantees of safety under conditions that might otherwise become hazardous. Altogether, then, the prospect is one of encouragement, and in meeting it, it behooves us to remember that our profession has a greater opportunity for service in America, with her urbanized people and her unassimilated millions, than in any other country in the world.

## THE PROPHYLAXIS OF CROUPOUS PNEUMONIA.

THE pneumonia season is at hand. This disease keeps on claiming an enormous and increasing number of victims. It constitutes about 2% of all internal diseases and is responsible for nearly 10% of all deaths in the United States to-day. The mortality for tens of thousands of cases remains where it was one hundred years ago — between 20 and 25%. The day is probably coming when we shall have a specific for pneumonia, but until that day comes we must fight the disease as we have in the past, and we can hardly expect a decrease in mortality.

In one respect, however, we can improve on the past, and that is in the matter of prophylaxis. Although we cannot cure more cases than formerly, we can many times prevent the occurrence of the disease. In many cases of pneumococcus pneumonia there is a history of recent infection,

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generally severe, somewhere in the respiratory tract — a bad "cold in the head" or a follicular tonsillitis, laryngitis or bronchitis. The patient recovers, perhaps without being obliged to give up any of his ordinary duties, and seems perfectly well to himself, his family and his physician. But he may be harboring the pneumococcus all the time, and after his resistance has been lowered by business worry or long hours of work during the holiday season, by the frightful dust of the snowless streets and finally, perhaps, by careless or unavoidable exposure on a cold or wet night, the deadly micro-organism has his chance. We ought to take more seriously the cases of acute respiratory infection which come under our observation, especially between November and June, when most cases of pneumonia occur. A case of acute bronchitis should not be allowed to pass without a sputum examination. If pneumococci are present, the patient should be kept in bed as long as there is the slightest fever, and after that he should be treated as a convalescent from pneumonia. He has had a pneumococcus infection, and, after all, pneumonia itself is only a pneumococcus infection with local manifestations in the lung.

A still better way to prevent pneumonia is to avoid the previous infection of the upper air passages. People who live in city streets should cleanse the nose, mouth and throat every night as a routine measure. The pneumococcus, according to Musser and Norris, has been isolated from the throats of 50 out of 80 normal individuals. Wells demonstrated it in the respiratory passages of 62 out of 135 persons examined. Convalescents from pneumonia may carry virulent organisms in their throats for weeks or even months. The chief source of the pneumococcus is the sputum of the pneumonia patient. Woods found that the organism could live in moist sputum as long as two weeks. When the sputum becomes dry, pneumococci can be easily distributed on dust particles in the air. The patient, in coughing, sneezing or talking, expels into the air "droplets" which may contain pneumococci. The Medical Commission for the Investigation of Acute Respiratory Diseases in New York finds that infection may be acquired by the inhalation of dried sputum or of freshly exhaled droplets suspended in the air of the sick room, or by contact with utensils used by pneumonia patients. According to Woods, the danger from infected sputum can be avoided by ample illumination (sunlight) and ventilation of the sick room and by refraining from dry sweeping and dusting. Sputum cups should be insisted upon. The best way of disinfecting the sputum is by keeping a strong solution of sodium hydrate in the cup. Corrosive sublimate and carbolic acid do not disinfect the central portion. The patient should be isolated from all except those taking care of him, and articles which may be contaminated and which cannot be cleaned by cloths dampened with a disinfectant should be removed from the patient's vicinity. Isolation in hospital wards is desirable. A physician should never pass from a pneumonia patient to a patient with some other disease without washing his hands.

## HOSPITAL BUREAU OF STANDARDS AND SUPPLIES.

THE recently published first annual report of the Executive Committee of the Hospital Bureau of Standards and Supplies presents a statement of the work of the Bureau during the first seven months of its existence, ending Sept. 30, 1910. This new and interesting organization was established last spring in New York for the purpose of securing to hospitals "the advantages of co-operation in establishing uniform standards as to quality and kind of supplies ordinarily used therein and of purchasing the same in accordance with definite specifications under continuing or other general agreements, and for the purpose of promoting the economic and efficient administration of such hospitals."

Five New York hospitals entered this co-operative association, to which nine others have since been admitted. The Bureau has already formed 21 agreements, of which 17 are still in force, covering such articles of supply as ice, coal, gauze, incandescent lamps, bottles, pins, meat, adhesive plaster, toilet paper, paint, blankets, coffee, towels and alcohol, and already has shown a substantial saving in the purchase of such articles above the cost of administering the Bureau.

The project certainly seems one of great value and efficiency. Its continued success depends on the number of institutions which become affiliated with it, since each new member reduces the expense of maintenance for the rest. It is purposed to establish a non-resident membership for institutions outside New York City. The Bureau affords admirable illustration of the benefits of intelligent co-operation, and the widening of its usefulness should result in the establishment of similar associations among hospitals in other sections of the country.

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## IMMUNITY OF ANIMALS TO POISONS.

The varying susceptibility of different animals to the several vegetable and mineral poisons is well known. Dogs tolerate large quantities of morphia, and elephants eat codeia with apparent impunity. A large trick elephant, executed in New York last week for having killed her keeper, lived forty-four minutes after swallowing 500 gr. of potassium cyanide. Nor is this tolerance solely a matter of proportionate bulk, because the hedgehog is also highly resistant to cyanic poisons. Moreover, this fortunate animal has a high degree of immunity to the toxins of diphtheria and tetanus, and to snake venom. There is opportunity for considerable investigation and perhaps valuable discovery in the comparative study of animal sera and immunity.

## MEDICAL NOTES.

Pellagra in South Carolina. — Report from Spartanburg, S. C., states that of 332 deaths in that city thus far this year, 21 have been due to pellagra.

Epidemic Conjunctivitis in Virginia Military Institute. — It is reported from Lexington, Va., that the Virginia Military Institute in that city has been closed until Jan. 4, 1911, on account of epidemic conjunctivitis among its pupils. The nature of the infecting agent is not stated.

Bubonic Plague in Manchuria. — Report from St. Petersburg states that bubonic plague is now epidemic throughout Manchuria. Rigid precautions are being observed along the frontier to prevent entrance of the infection into Siberia.

Illness of Queen Elizabeth of Belgium. — It is reported from Brussels that the illness of Elizabeth, Queen of the Belgians, which was at first supposed to be bronchitis, has now been diagnosticated as typhoid fever. Her majesty is said to be progressing favorably.

Smallpox in Michigan. — Report from Lapeer, Mich., states that about Nov. 6 smallpox became epidemic among the inmates of the State Home for Feeble Minded in that city, since which time there have been 30 cases and 14 deaths of the disease. The institution is under quarantine, enforced by a military guard.

Cholera in Italy and Canada. — During the week ending Nov. 26, 29 new cases and only 4 deaths of Asiatic cholera were reported in Italy, where the epidemic seems to be distinctly subsiding. The Russian suspect, detained at Quebec, Canada, to whom we refered in last week's issue of the Journal, is said to have proved a genuine case of cholera, but is recovering.

Death of a Cretin in Oregon. — From Canyonville, Ore., is reported the death, on Nov. 21, of a girl thirteen years old and weighing only fourteen pounds, presumably a cretin, who had not enjoyed the therapeutic advantages of thyroid extract.

Death from Headache Powders. — The recently reported simultaneous sudden death in Brooklyn, N. Y., on Nov. 25, of two women with signs of acute poisoning, after taking headache powders procured of two different druggists, re-emphasizes the dangers of such remedies obtained without prescription. An investigation is being made of the contents and place of manufacture of the powders.

Cinematographs of Tuberculosis. — The National Association for the Study and Prevention of Tuberculosis has made arrangement for the simultaneous exhibition this week, in a number of moving picture theaters throughout the country, of a series of films illustrating the modes in which tuberculosis is transmitted and the methods by which it may be combatted.

Some Charitable Bequests. — The will of the late Mrs. R. G. Dun, who died recently at Hot Springs, W. Va., was filed for probate on Nov. 22 at Narragansett Pier, R. I. Among several public charitable bequests it contained one of $20,000 to the Orphan Asylum of New York City, and one of $5,000 to the Home for Blind Babies at Bay Ridge, N. J.

Gift of Land for a Tuberculosis Sanatorium. — It was announced last week at Colorado Springs, Colo., that James K. Polk Taylor of that city has given a tract of 480 acres of land at Calhan, Colo., to the Charles Sumner Tuberculosis Association as a site for a National Tuberculosis Sanatorium for negroes, which is to be erected at a contemplated cost of three hundred thousand dollars. Mr. Taylor was born a slave, but since his emancipation has become a prosperous landowner in the West.

Appeal for North Shore Babies' Hospital. — An appeal to the public is made by the officers of the North Shore Babies' Hospital for money which is urgently needed for immediate repairs and improvements in the diet kitchen, laundry

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and bathroom. This free institution does a valuable charitable work, and its needs should not be unheeded by those who are able to give.

RELATIONS OF ANIMALS TO HUMAN TUBERCULOSIS. — In an address last week before the Boston Scientific Society, Dr. Edwin H. Schorer described the varieties of tuberculosis in animals, other than man, and particularly those animals, like cattle, dogs, cats and parrots, with which man comes into more or less close personal contact. He emphasized the importance of this relation in that it affords opportunity for transmission of latent forms of the disease, if not of direct infection.

LECTURES BEFORE THE NURSES' CLUB. — At the regular fortnightly meeting of the Nurses' Club of Boston, this evening, Dec. 1, Dr. Cleaveland Floyd will deliver an address on "Newer Methods of Treating Pulmonary Diseases." At the meeting on Dec. 15, Dr. Charles R. C. Borden will speak on "Diseases of the Ear, Nose and Throat, and their Influence on the General Health." The public is cordially invited to these lectures, which will be given at 8 P.M. in the rooms of the club at 755 Boylston Street.

CONTINUANCE OF THE TYPHOID EPIDEMIC AT ANNAPOLIS. — During the week ending Nov. 26, three more new cases of typhoid fever were reported at the United States Naval Academy at Annapolis, making a total of twenty students now ill with the disease. There have been no deaths, and all the patients are said to be progressing well. It is believed that the source of the infection has been traced to a temporary extra supply of milk which was used at the Academy from Oct. 19 to Nov. 9. The occurrence of this epidemic should give weight to the Surgeon-General's recent recommendation that anti-typhoid inoculation be made compulsory in the army.

CUT RATES IN PROPRIETARY MEDICINES. — A suit is now pending before the United States Supreme Court involving the legality of "cut rates" for proprietary medicines. The suit was originally brought before the United States Circuit Court by a company at Elkhart, Ind., which undertook to restrain the sale of its medicines at reduced prices by a firm in Cincinnati, Ohio. The desired injunction was refused, and this decision was sustained by the Circuit Court of Appeals. The suit, which has now been appealed to the Supreme Court, is based on a series of contracts by which the manufacturers attempt to control the prices of their goods. The decision of this question will have an important bearing on the problem of "cut rates" in all proprietary medicines.

INHIBITION OF A PSEUDO-MEDICAL COLLEGE. — Under the law forbidding the use of the word "college" by an unchartered institution of learning, the New York State Education Department issued on Nov. 25 an injunction against the so-called "American College of Science" in Rochester, N. Y., an establishment which has been conferring unauthorized degrees in mesmerism, hypnotism and personal magnetism. This action was taken on complaint by the consul-general from Guatemala that several graduates of this institution were practising in his country. In not desiring their presence, the inhabitants of Guatemala seem to have been more sensible than some of our own citizens. It is to be hoped that the injunction may serve to check at least one of the forms of dangerous pseudo-medical charlatanism which are rampant in the land.

## BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON.— For the week ending at noon, Nov. 16, 1910, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 41, scarlatina 28, typhoid fever 9, measles 20, smallpox 0, tuberculosis 67.

The death-rate of the reported deaths for the week ending Nov. 16, 1910, was 16.56.

BOSTON MORTALITY STATISTICS.—The total number of deaths reported to the Board of Health for the week ending Saturday, noon, Nov. 19, 1910, was 211, against 174 the corresponding week of last year, showing an increase of 37 deaths, and making the death-rate for the week, 16.33. Of this number 107 were males and 104 were females; 204 were white and 7 colored; 118 were born in the United States, 92 in foreign countries and 1 unknown; 48 were of American parentage, 139 of foreign parentage and 24 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 42 cases and 0 deaths; scarlatina, 19 cases and 0 deaths; typhoid fever, 9 cases and 4 deaths; measles, 22 cases and 0 deaths; tuberculosis, 50 cases and 18 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 33, whooping cough 0, heart disease 32, bronchitis 5. There were 14 deaths from violent causes. The number of children who died under one year was 36; the number under five years 49. The number of persons who died over sixty

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years of age was 71. The deaths in public institutions were 81. Anterior poliomyelitis, 2 cases.

Of the above infectious diseases the following were non-residents: Diphtheria, 1 case. Consumption, 1 death. Scarlet fever, 1 case. Anterior poliomyelitis, 1 case.

Deducting deaths of non-residents, the total is 183 and the death-rate is then 14.16.

Arrests for Promiscuous Spitting. — Prosecution of the so-called "spit war" is still proceeding vigorously in Boston. During the week ending Nov. 26, 63 arrests for illegal expectoration were made in the city, and nearly all the prisoners were fined two dollars each. Ten of them, being unable to pay the fine or furnish bail, were obliged to spend one or more days in jail.

Deportation of a Case of Trachoma. — In September last, an Armenian immigrant, who had entered this country from Halifax, N. S., in July, was arrested at Boston, found to have trachoma, and ordered deported. In the interim, she had married an American citizen, and now on this basis claims immunity from deportation. Whatever the technical merits of her case, it is to be hoped that she will not be allowed to become a menace to others by remaining at large with an infection of such serious nature.

Punishment for Illegal Sale of Cocaine. — The prisoners, whose recent arrest in Roxbury for illegal sale of cocaine we chronicled in the issue of the Journal for Nov. 17, were tried last week in the local district and were each sentenced to imprisonment for terms varying from one month to four months. Several of them appealed and were held in bonds of three hundred or four hundred dollars. It is to be hoped that their punishment may be not greater than they can bear, but severe enough to act as a deterrent to them and to others in the future.

Two Centenarians. — Mrs. Delima Beaudry, who died last week at Woonsocket, R. I., is said to have been born on Nov. 25, 1809, at St. Anne de la Parade, P. Q., Canada, the eldest of a large family of children. She was twice married, and by her first husband had sixteen children, of whom six, together with all her own younger sisters and brothers, survive her.

Mr. Hubbard Blakeslee of Ridgefield, Conn., locally reputed to be one hundred and three years old, was burned to death on Nov. 24 in a barn at Southport, Conn., where he was staying in charge of a prize stallion and a drove of hogs. The accidental upsetting of an oil stove is supposed to have been the cause of the disaster. It seems hard that a man of his advanced years should meet death by violent rather than natural means.

An Ancient Peacock. — Man is not the only animal that sometimes lives to great age. The longevity of elephants and parrots is proverbial. Report from Sulphur Well, Metcalfe County, Ky., states that one of the farmers of that district possesses a peacock known to have been alive in 1800 and still in vigorous health.

A Lamentable Instance of Dishonesty. — Dishonesty among members of the medical profession is always exceptionally lamentable, dishonorable and unpardonable, for they have greater occasion than any other class of men to learn the value and sanctity and prevailing greatness of truth, and are doubly bound to practise the principles which they recognize. It is with the greatest regret that we learn that three graduates of the class of 1897 in dentistry in Harvard University, an institution dedicated to Truth, have been blacklisted by the Harvard Athletic Association for selling to speculators football tickets which they had themselves purchased under an express stipulation not so to dispose of them. There can be no question as to their deliberate dishonesty. They should have been beyond such mercenary temptation. Their conduct is a disgrace to their profession. They deserve the ignominy which attaches to their punishment.

### NEW YORK.

Department of Bacteriology at Museum of Natural History. — A department of bacteriology has recently been inaugurated at the American Museum of Natural History on Manhattan Square.

Lecture on Public Health. — On Nov. 21 the lecture in the public course at Columbia University on "Public Health Protection" was by Dr. Simon Flexner, of the Rockefeller Institute. His subject was "The Rise of Bacteriology," and in concluding his discourse he remarked: "In no other natural science has practical achievenent followed more quickly and surely upon what in the beginning was thought to be abstract knowledge."

Safety Devices. — A permanent exhibition of safety devices, under the auspices of the American Museum of Safety, was formally opened on Nov. 21 in the Engineering Societies Building on

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Thirty-ninth Street, near Fifth Avenue, and on this occasion an illustrated lecture was given by Dr. W. H. Tolman, the director of the museum, who has recently returned from a study of similar institutions in Europe. It is the hope of the founders eventually to make it equal to the great museum of safety in Berlin. It will be the aim not only to encourage the development of safety devices, but also to develop sanitary appliances tending to reduce the death-rate among workmen in the various trades.

SALE OF PROPERTY OF SOCIETY FOR RELIEF OF RUPTURED AND CRIPPLED. — The New York Society for the Relief of the Ruptured and Crippled has sold its hospital property on Lexington Avenue, extending from Forty-second to Forty-third Street, for $1,350,000 to the New York Central Railroad Company, which by this purchase acquires the final piece of property required to complete its plans for the enlargement of the Grand Central Station and yards. By the terms of the sale the hospital will not vacate its buildings for a year, by which time it is expected that a new hospital, in a less central location, will be ready for occupancy. It is also purposed to have a country annex for convalescent patients. The Society for the Relief of the Ruptured and Crippled was founded in 1863, largely through the instrumentality of the late Dr. James Knight, who remained at the head of its hospital until his death. In 1867 it purchased the large property just sold and erected the building at the Forty-second Street corner, and the adjoining building fronting on Forty-third Street was constructed fifteen years ago.

PAGE LAW AND PHYSICAL EXAMINATION OF WOMEN. — That part of the Page law for the inferior criminal courts, passed by the last legislature, which provides for the physical examination of women, has been declared unconstitutional by Justice Bischoff, of the New York Supreme Court, in an opinion handed down on Nov. 25 in *habeas corpus* proceedings brought to release a woman confined in the workhouse. The writ was granted on the ground that the statute directs the detention of the accused without due process of law, in that the sentence is made to depend upon the report of a physical examination without the opportunity for a hearing upon the facts entering into the report. The statute, which went into effect on Sept. 1, provides that women, on conviction, may be held for any time short of a year within the discretion of the magistrate.

DEATH OF "QUEEN." — It took forty-four minutes to kill a female elephant with 600 gr. of potassium cyanide, at the winter quarters of a circus in Jersey City, on Nov. 25. It was determined to execute "Queen," as she was called, for the vicious killing of one of her keepers, and the poison was administered in six capsules, which were put into three pails of "bran mash." The elephant, which weighed 7,650 lb., was one of the largest ever exhibited in America, and was believed to be nearly ninety years old.

## Current Literature.

MEDICAL RECORD.

Nov. 19, 1910.

1. MAGNUS-LEVY, A. *Chemical Problems in Diabetes.*
2. *STANTON, E. M., AND KRIDA, A. *The Causes of Death from Shock by Commercial Electric Currents, and the Treatment of the Same.*
3. MEARS, J. E. *The Use of Thiosinamin in the Treatment of Cicatricial Formations following Burns.*
4. KAPLAN, D. M. *Concerning the Restoration of Inhibitory Qualities in Liver Extracts.*
5. MITCHELL, J. R. *A New Theory of Eclampsia.*

2. Stanton and Krida write a valuable paper on the subject of electric shock, reviewing the literature and reporting their experiments on dogs. They find that the two great causes of death are cardiac fibrillation and respiratory paralysis. Low-tension currents usually kill by producing fibrillary contractions of the heart, in which the individual muscle fibers contract in an utterly incoördinate manner. As the tension is increased, the effect on the heart becomes less pronounced and the effect on the central nervous system more and more certain, so that with high-tension currents death is more likely to be caused by respiratory failure. Cardiac fibrillation is always fatal. In cases of simple respiratory paralysis, the patient may be kept alive by artificial respiration until the nervous system recovers from the effects of the shock. [L. D. C.]

NEW YORK MEDICAL JOURNAL.

Nov. 19, 1910.

1. STEVENS, G. T. *A Series of Studies of Nervous Affections in Relation to the Adjustments of the Eyes.*
2. GORDON, A. *Pathogenesis of the Toe Phenomenon.*
3. INGLIS, D., KLINGMAN, T., AND BALLIN, M. *Extramedullary Spinal Cord Glioma.*
4. YOUNG, A. D. *The Proper Method of Administering Ether.*
5. FRESCOLN, L. D. *Anesthesia Dangers.*
6. WATSON, L. F. *Local Anesthesia in General Surgery.*
7. SALLOM, M. *The Determination of the Dose of Stovaine in Spinal Anesthesia by Blood-Pressure Observations.*
8. MACWHINNIE, A. M. *Tonsil-Grasping Forceps.*
9. LEVIN, N. P. *What is the Direct Cause of the Seizures of Epilepsy?*
10. BELL, F. M. *Reveries of a Young Practitioner.*

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

Nov. 19, 1910.

1. JONAS, A. F. *Operative Treatment of Simple Fractures.*
2. DUNHAM, J. D. *Clinical Results of Gastro-Enterostomy for Non-Malignant Diseases.*
3. STERN, H. *Blood Letting in Children.*
4. NELSON, R. M. *An Original Method for Prevention of Perforation in Submucous Resection.*
5. LESPINASSE, V. D., FISHER, G. C., AND EISENSTAEDT, J. *Practical Mechanical Method of End-to-End Anastomosis of Blood Vessels, using Absorbable Magnesium Rings.*

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6. *Pilcher, J. T. *Absence of Hydrochloric Acid with Blood in Stomach Secretions as a Symptom of Chronic Gastritis.*
7. Barrett, C. W. *Place of Hebosteotomy as an Aid to Delivery.*
8. *Litchy, M. J. *Influence of Perigastric Lesions on Gastric Secretions. A Study Based on Clinical and Experimental Observation.*
9. *Skoog, A. L. *Treatment of Acute Anterior Poliomyelitis.*
10. Rous, P. *Metastases and Tumor Immunity with a Transmissible Avian Neoplasm.*
11. Minor, C. L. *Diagnosis and Treatment of the Earlier Changes in the Larynx in Pulmonary Tuberculosis.*
12. Foster, G. B. *Antityphoid Vaccination. An Instance Illustrating Its Efficacy.*

6. Pilcher, from the examination of the gastric contents in four thousand cases, believes that there is a definite entity presented in the stomachs of patients suffering from various intra-abdominal and extra-abdominal pathologic conditions which is characterized by the absence of hydrochloric acid and the presence of "occult" blood. This condition is probably produced by a nervous reflex inhibiting first the production of free hydrochloric acid to only a moderate degree, but enough to allow the increased growth of pathologic bacteria, such as the streptococcus and colon group. These act as direct irritants in conjunction with such primary irritative factors as gallstones, appendicitis, pancreatitis, and produce an ulcerative erosion of the mucous membrane which gives the "occult" blood found in these cases. These are, therefore, not cases of "achylia gastrica," as shown by the prompt return to normal when operative relief from the primary extragastric condition is effected. Such cases occur in about one in every fifteen stomach cases.

8. Litchy also bears out Pilcher's observations in a series of experimental observations on dogs, in which perigastric lesions were produced in the gall bladder and appendix, or pouch of the cecum, and were followed or accompanied by a hypo-secretion of hydrochloric acid and the presence of "occult" blood. Litchy also found a decrease of acidity during starvation and an increase following excitement.

9. Skoog advises lumbar puncture, both for diagnosis and relief of symptoms in the early stages of acute poliomyelitis, especially when there is any tendency to meningeal embarrassment. He also uses hexamethylenamin, 0.12 to 0.24 gm. doses, during this stage, and in other non-infected children in the same family, as a prophylactic. He believes that rest is of greatest importance and if rigidly enforced may abort some cases of paralysis. He also quarantines all cases and urges that it should be made a reportable disease throughout the United States.

[E. H. R.]

### The American Journal of the Medical Sciences.

October, 1910.

1. *McCrae, T. *Dilatation of the Aorta.*
2. Stengel, A., and Pepper, W. *Heart Block, with an Indication of Genuine Hemisystole.*
3. *Eshner, A. A. *The Treatment of Aneurysm of the Aorta by the Introduction of Wire and the Passage of a Galvanic Current.*
4. Claytor, T. A., and Merrill, W. H. *Orthodiagraphy in Pathological Conditions of the Heart and Aorta.*
5. Libman, E., and Celler, H. L. *The Etiology of Subacute Infective Endocarditis.*
6. *Edwards, A. R. *Syphilitic Febrile Pylephlebitis, with Remarks on Syphilitic Fever and Aberrant Types of Hepatic Syphilis.*
7. Einhorn, M. *Stretching of the Cardia in the Treatment of Cardiospasm and Idiopathic Dilatation of the Esophagus.*
8. Sewall, H. *A Preliminary Note on Medical Uses of Rectal Infusions.*
9. *Rachford, B. K. *The X-Ray Treatment of Status Lymphaticus, with Inferences drawn therefrom concerning the Physiology of the Thymus Gland.*
10. Rudolf, R. D., and Cole, C. E. C. *A Case of Splenomegaly associated with Marked Anemia of the Pernicious Type.*
11. Camac, C. N. B., and Milne, L. S. *The Spinal Cord Lesions in Two Cases of Pernicious Anemia.*

1. McCrae discusses the subject of diffuse dilatation of the aorta as illustrated by a series of sixty cases. Two main groups of cases occur, the first following acute infectious diseases, notably rheumatic fever, and the second having its etiology in the causes of arteriosclerosis and aneurysm, although syphilis probably plays a less prominent rôle than in true aneurysm. Clinically the condition may exist without symptoms, or with symptoms which may be explained by coexistent myocardial or valvular disease, but many cases complain of dyspnea and thoracic pain of varying degree. Pressure symptoms and signs are common, but rarely severe. The chief physical signs are visible pulsation in the upper interspaces, dullness over the upper sternum and changes observed by means of the x-ray. The importance of recognition of this condition as distinguished from aneurysm lies in the much more favorable prognosis of the diffuse dilatation.

3. Eshner reviews the various methods that have been used to induce thrombosis in aneurysmal cavities with special reference to wiring and electrolysis. He reports 2 cases and has collected 38 from literature. He concludes that while aneurysm of the aorta is essentially a fatal disorder, in sacculated forms wiring and electrolysis is a simple and safe procedure and has led to satisfactory results in a majority of instances where its use has been reported.

6. Edwards reports a case of febrile pylephlebitis which promptly recovered when given antisyphilitic treatment. From a study of literature he finds a number of descriptions of syphilitic conditions simulating septic disorders of the liver.

9. Rachford has treated two cases of status lymphaticus by means of x-rays with distinct improvement. The thymus gland, which was distinctly large to percussion, became smaller and the thymic asthma disappeared.

[F. W. P.]

### The Archives of Internal Medicine.

October, 1910.

1. *Hamman, L. *The Heart Muscle in Typhoid Fever.*
2. Hirschfelder, A. D. *The Functional Disturbances in Paroxysmal Tachycardia.*
3. *Wood, H. C., and Hofer, C. A. *An Experimental Study of the Pharmacology of Ergot.*
4. Wentworth, A. H. *The Utilization of Milk-Fat by an Atrophic Infant.*
5. *Fleisher, M. S., and Loeb, L. *Further Investigations in Experimental Myocarditis.*
6. Longcope, W. T., and McClintock, A. T. *The Effect of Permanent Constriction of the Splanchnic Arteries and the Association of Cardiac Hypertrophy with Arteriosclerosis.*
7. White, W. C., and Van Norman, K. H. *An Individual Quantitative Index to Tuberculin Dosage in Treatment.*

1. Hamman reports a study of the heart-muscle in forty-three fatal cases of typhoid fever. He compares this with the clinical histories of the same patients, and finds that, although there were changes in the heart-muscle in every case, there was no direct relation between the severity of the pathological changes and the clinical manifestations of the disease. Irregularity of rhythm and the physical signs of beginning dilatation occurring during the course of an infectious disease are, Hamman thinks, fairly certain signs of some cardiac lesion. In the cases which he studied, he frequently met with peri-arteritis and endarteritis in the large and medium-sized branches of the coronary arteries, and from this he concluded that the acute infections may have a late deleterious effect upon the circulatory system, even if they do not affect it during the acute attack.

3. From their study of ergot, Wood and Hofer conclude that ergot is a stimulant to all the unstriped muscle tissue of the body, hence it has a stimulant effect on the arterial muscles and probably on the heart. The active principle they believe to be an alkaloid — hydro-ergotinin — which, in combination with a resinous body, forms sphacelotoxin. The percentage of sphacelotoxin varies accurately with the physiological activity of different specimens of ergot.

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Fluid extract of ergot deteriorates so rapidly that even under the most favorable conditions there is a loss of strength approximating 10% a month, and if the drug is exposed to the air, the loss is even greater.

5. Fleisher and Loeb, by injecting spartein or caffeine and adrenalin into rabbits, produced a condition of overwork for the heart-muscle which resulted first in edema of the muscle, later in small areas of fibrosis. The site of this lesion at the base of the ventricle they think points to a purely mechanical explanation for the change, instead of pointing to the theory that the lesion is due to lack of nutrition of the muscle fibers involved. In order to apply this theory to man, it would be interesting to know whether the immediate effect of the injection upon the general circulation of the rabbit is more or less severe than the effect of athletic feats or "strength stunts" upon the circulation of man. [G. G. S.]

ANNALS OF SURGERY.

OCTOBER, 1910.

1. *POOL, E. H., AND MCCLURE, R. D. *Transfusion by Carrel's End-to-End Suture Method.*
2. GOODMAN, C. *Blood Transfusion in Hemophilia.*
3. *CARREL, A. *Graft of the Vena Cava on the Abdominal Aorta.*
4. *BLAIR, V. P., AND MCGUIGAN, H. *A Suggestion for the Treatment of Air Embolism.*
5. FARR, C. E. *Preservation of the Submaxillary Branch of the Facial Nerve in Operation on the Neck.*
6. TOREK, F. *Anesthol Poisoning causing Acute Yellow Atrophy of Liver after Operation for Ileocolic Intussusception.*
7. SPEESE, J. *The Surgical Aspect of Epulis and Sarcoma of the Jaw.*
8. *VON EBERTS, E. M. *The Use of Differential Pressure in the Treatment of Empyema.*
9. *MAYLARD, A. E., AND ANDERSON, J. *Primary Sarcoma of the Stomach.*
10. CORNER, E. M. *The Function of the Appendix and the Origin of Appendicitis.*
11. *BARTLETT, W. *A Simple Method of Suturing all Hollow Viscera.*
12. *DAVIS, C. B. *The Recto-Sigmoidal Arterial Anastomosis.*
13. *SCUDDER, C. L. *The Bone Metastases of Hypernephroma.*
14. HAUBOLD, H. A. *Plastic Repair of the Thumb.*
15. CRANDON, L. R. G. *Wright's Solution of Sodium Citrate and Sodium Chloride for Drainage.*
16. SWEET, J. E. *The Relation of the Ductless Glands to Surgery.*

1. Pool and McClure have in the last year performed twelve transfusions by the end-to-end suture method of Carrel on ten patients. Many records of the hemoglobin, red and white cell counts, pulse-rate and blood pressure were made. The cases were secondary anemias of various causes, except one of gas poisoning and one of septic endocarditis and septicemia. Both these cases died; the first from extensive destruction of brain cells, the latter from her weak heart, which was unable to tolerate the increased burden of the transfused blood. Four cases (probable hemophilia, a severe anemia with high color index in which three transfusions were done, papilloma of the bladder, and infected uterine fibroid with pyemia) were apparently raised from the grave.

3. Carrel reports the successful resection of the abdominal aorta repaired by a graft consisting of a somewhat larger section of the vena cava in three animals. All were allowed to walk and eat as usual after a few hours. The deaths were completely independent of the operations (one killed by chloroform ten months after operation owing to the development of a pyelonephritis; another died apparently of old age three months after operation, and the third lived in perfect health for fourteen months, then died in a few days of pneumonia). The condition of the aorta and venous segment were studied. The anastomoses were excellent. The venous wall reacted against the arterial blood pressure by thickening its wall (an increase in connective tissue, probable increase in muscular fibers, and occasional increase in elastic fibers, but not observed in these experiments).

4. Blair and McGuigan have, on dogs and cats, experimentally produced air embolism and tried various measures for resuscitation. Some animals succumbed after the injection of very small quantities of air. Other animals recovered without treatment after the injection of much larger quantities of air. There was always a fall of blood pressure, dyspnea and restlessness. Respiration always stopped before the heart, owing to the ineffectiveness of the heart-beat in pumping blood to the respiratory center. Cardiac massage alone failed to remove air from the heart. The injection of fluid to fill partially the right heart and sweep the air into the pulmonary circulation failed because the weakened heart could not tolerate the burden of volumes of fluid sufficient to accomplish this result. Fluid plus an instantaneous powerful cardiac stimulant was tried. The authors suggest for the human 2 ccm. of 1:1,000 adrenalin solution injected directly into the right ventricle accompanied by saline solution. They do not state the amount of saline, but used in their animals 40 to 100 ccm. The strain of the injection may be lessened by simultaneous bleeding from a peripheral vessel. The Schafer method of artificial respiration is recommended when respiration ceases.

8. Von Eberts describes an airtight dressing and drainage device for use after rib resection in the treatment of empyema to favor the expansion of the lung and to demonstrate the daily amount of discharge.

9. Maylard and Anderson present two unusual cases of primary gastric sarcoma, one a unilocular cystic tumor with long pedicle, without stomach symptoms, and mistaken for an ovarian cyst.

11. Bartlett describes a continuous, single-row suture embracing all coats suitable for the anastomosis of all hollow viscera. It has been used exclusively by the author for two years with perfect satisfaction.

12. Davis has investigated the rectosigmoidal anastomosis in twenty-one subjects, in some by dissection of the vessels, in others by x-ray pictures of the vessels injected with a starch-lead-oxide mass. The female showed no variations peculiar to her sex. The anastomotic loop between the sigmoid and superior hemorrhoidal was found on an average 1.5 cm. below the promontory of the sacrum (in one case it was 5 cm. below). In several cases bifurcation of the superior hemorrhoidal occurred before the sigmoidal loop joined the rectal supply, in which cases ligation immediately above the loop (Hartman) would be dangerous. In the majority of cases Davis confirmed the wisdom of clamping vessels as far from the rectum as possible when operating by the sacral route, for the loop usually lay close to the bowel, but in some cases the loop arises so far from the bowel that the observance of such a rule would be disastrous. Two cases showed no loop.

13. Scudder completes the record of a case previously reported.[1] An amputation at the shoulder-joint had been done for sarcoma of the humerus. Microscopic examination of the removed tumor showed it to be hypernephroma. While still under the anesthetic a slight enlargement of the left kidney was made out. This was symptomless. Nephrectomy was urged on the ground that no other metastases could be found but was refused. Almost five years later death occurred, and a complete autopsy showed no local return and no other metastases. This case may be added to the series of Albrecht (Hochenegg's clinic) of hypernephroma with solitary bone metastasis. [T. W. H.]

DEUTSCHE MEDIZINISCHE WOCHENSCHRIFT. No. 43.

OCT. 27, 1910.

1. WEBER, L. W. *Treatment of Morphinism.*
2. *LOEFFLER, F. *A New Method for Successful Staining and Detection of Rare Tubercle Bacilli.*
3. EBSTEIN, W. *Treatment of Hay Fever.*
4. *MUNK, F. *The Effect of the Treatment with "606" in Syphilis upon the Wassermann Reaction.*
5. HIRSCHBERG, M. *Test for Functional Ability of the Pancreas.*
6. *ASCOLI, A. *The Meiostagmine Reaction in Foot and Mouth Disease.*
7. WIDEROE, S. *The Anatomical Reciprocity of the Organs of Internal Secretion.*
8. POLLAK, L. *A Case of Copper Sulphate Poisoning with Peculiar Blood Picture.*

[1] Ann. Surg., December, 1906, p. 851.

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9. Pechowitsch, G. *Influence of Creeping Exercises on Lordotic Albuminuria.*
10. v. Poppen, A. *Diseases of the Conjunctiva in Cases of Graves' Disease with Exophthalmos.*
11. Dreuw. *The Treatment of Itching Dermatitis with Warm Moving Air.*
12. Schlesinger, A. *Advances in the Realm of Clinical Surgery.*
13. Schall, M. *Technical Improvements in the Field of Medicine.*

2. Loeffler recommends a new method for detecting small numbers of tubercle bacilli. It is a modification of the antiformin method, and consists in dissolving with antiformin and then centrifugalizing after the addition of a mixture of alcohol and chloroform. He gives the technic in detail.

4. Munk, as a result of some experimental work on rabbits, has come to the conclusion that the new Ehrlich preparation does not affect the Wassermann reaction. Whatever it is that the spirochete produce in the serum to give the positive reaction seems to be produced also by the spirochete after destruction by the new preparation.

6. This author found that the blood serum of animals attacked with foot and mouth disease showed on the addition of an extract of the virus a specific diminution of surface tension, so that there were more drops in a given volume. This test seems to last for some time after the attack. [C. F., Jr.]

Münchener Medizinische Wochenschrift. No. 41.

Oct. 11, 1910.

1. Dibbelt, W. *Disturbances of the Metabolism of Lime in Rachitis.* (To be concluded.)
2. *Beneke. *Rupture of the Tentorium at Birth and Tension of the Dura in Chronic Cerebral Diseases.*
3. Grube. *Mechanics of Birth of the Head and Protection of the Perineum.*
4. Ascoli, M., and Izar, G. *Technic of the Meiostagmin Reaction in Malignant Tumors.*
5. *Baermann, G., and Wetter, N. *The Wassermann Reaction in the Tropics.*
6. Kepinow, L. *The Simplified Wassermann Reaction by the Method of v. Dungern and Hirschfeld.*
7. Engelhorn, E. *Results of Treatment for Nervous Conditions due to Gynecological Disturbances.*
8. Frühwald, R. *Puncture Treatment of Epididymitis Gonorrhoica.*
9. Schwartz and Flemming. *Studies on Guinea Pigs of the Ehrlich-Hata Preparation.*
10. Ehlers. *Ehrlich's "606" for Leprosy.*
11. Fessler, J. *A Non-Irritating Method of Drainage for Wounds.*

2. Beneke advances the view that in infants with open fontanelles tension on the dura is of great importance in both acute and chronic cerebral diseases. A sudden lateral compression at birth may rupture the tentorium and may result in sudden death, protracted asphyxia or other mild or severe symptoms. Chronic increase of tension may be brought about by habitually laying the infant on its side. This increase of tension is due to compression of the longitudinal sinus by the weight of the head, and it may lead to chronic internal hydrocephalus or to hypertrophy of the brain.

5. The writer, working in Sumatra, obtained positive Wassermann reactions in large percentages of frambesia and leprosy, and in a considerable number of cases of malaria. One group of malarial cases having strong positive reactions before treatment continued to show them after the fever was gone. These were regarded as probably syphilitic. In other cases an incomplete reaction was present before treatment was begun, but disappeared entirely in a few days. [G. C. S.]

Berliner Klinische Wochenschrift. No. 44.

Oct. 31, 1910.

1. Senator, H. *Address at the Semi-Centennial Celebration of the Berlin Medical Society.*
2. Blochmann. *Diagnosis of Nasal Diphtheria in Infants.*
3. Field, E. *A New Method of Direct Proof of Free Acid in the Stomach.*
4. Zypkin, S. M. *Acute Myeloid Leukemia. A Case of Green Coloring of the Bone Marrow.* (To be concluded.)
5. Emmerich, M. *"Iodine Cachexia" in Arteriosclerosis.*
6. *Királyfi, G. *The Retrojugular Glands in the Early Diagnosis of Experimental Tuberculosis in the Guinea Pig.*
7. Levy-Dorn, M. *A Simple Scale for the Size of the Normal Heart in the X-Ray Picture.*
8. Frühwald, R., and Weiler, F. *The v. Dungern Modification of the Wassermann Reaction.*
9. Schlesinger, A. *A Simple Method of Intravenous Anesthesia.*
10. Aronson, H. *Concerning a Few Debated Points in the Biology of the Tubercle Bacillus.*
11. Bauer, A. *X-Ray Illumination without the Screen.*

6. The author has found that the earliest evidence of experimental tuberculosis in the guinea pig is in a pair of glands which lie behind the jugular vein. These glands he has found consistently enlarged and the seat of tubercular lesions from the eighth to the fourteenth day after an injection of tubercular material, while evidence of disease in other parts of the body does not manifest itself until after the lapse of from three to five weeks. The author describes his technic and the article includes an illustration. [J. L. H.]

Zeitschrift für Klinische Medizin. Bd. 71.

Heft 1 and 2.

1. Falta, W. *Glycosuria and Fatty Stools in Basedow's Disease; also on Röntgen-Ray Treatment in this Disease.*
2. Falta, W., and Schweeger, O. *On the Interrelation of Glands with Internal Secretion. Chemotaxis.*
3. *Mayerle, E. *Metabolism in Artificial Hyperthyroidism.*
4. *Holzknecht, G., and Olbert, D. *Atony of the Esophagus.*
5. *Obrastzow, W. P., and Straschesko, N. D. *Thrombosis of the Coronary Arteries of the Heart.*
6. Schueffner, W. *Pseudotyphus of Deli.*
7. Stoerk, O. *Electrocardiograms.*

3. Working with dogs, Mayerle finds that with repeated similar doses of thyroid extract hyperthyroidism comes on gradually and shows itself by (1) a negative nitrogen balance, i. e., a storing of nitrogen; (2) an increased output of water; and (3) increased burning of fats.

Loss of weight occurs if (*a*) there is not reserve absorption enough to compensate for loss; (*b*) the demand of the body is supplied by an easily assimilable substance, such as pure albumin.

4. The authors describe atony of the esophagus as a condition of the esophagus in which soft food is hindered in its passage, while fluids and large masses are passed along in a normal manner.

They classify thirteen cases under this head, excluding from the classification such conditions as paralysis of the esophagus, esophagismus and cardiospasm. The diagnosis depends upon x-ray findings, backed up by negative results with the esophageal sound. Normally soft solid food is waved down the esophagus in a few seconds by regularly following peristaltic waves, showing by fluoroscope as approximately four distinct masses; in conditions of atony the food lies, a thin pillar, the whole length of the esophagus, peristalsis being insufficient to break it up. That the condition is not one of spasm is shown by giving water, whereat the whole mass quickly glides into the stomach.

Most patients showing atony are neurotic, as a rule exhibiting signs and symptoms of an hysterical character. Atony may also be a temporary disturbance in organic nervous disease, may be the result of local pressure, as, for example, by the heart, or may be a manifestation of general weakness, and it is naturally one component of a sluggish gastro-enteric tract.

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Symptomatically dysphagia may be complained of, but more frequently the condition is not brought to light without questioning. Its diagnosis, as said, depends upon x-ray examination with bismuth, the technic of which is given.

5. The authors report three cases of coronary thrombosis with autopsy, and two cases without, and review several others. Symptoms were found to be of three types: (1) Pain was present in all of the cases, in two exhibiting radiation into neck, head and left arm; attacks were of five- or ten-minute intervals, with remissions at first, later becoming continuous to death: a status anginosus. (2) Dyspnea in two was very marked, accompanied by Cheyne-Stokes respiration, so-called status dyspnoeicus. (3) A sense of pressure in the epigastrium, status gastralgicus. All forms may be accompanied by nausea and vomiting. Signs: Cold and cyanotic skin; weak but usually regular heart action, though rapid; first sound often doubled, but no murmurs. There is evidence of peripheral anemia, venesection in one case causing no flow, and accompanying internal congestion, as shown by an enlarged liver.

History of previous anginal attacks was the rule. As for the duration of terminal attacks, three lasted a week, two less than forty-eight hours.

The essential difference between the diagnosis of coronary thrombosis and angina pectoris lies in the prolonged character of the pain in the former, be it status anginosus, status asthmaticus or status gastralgicus. [J. B. A.]

DEUTSCHE ZEITSCHRIFT FÜR CHIRURGIE. BD. 106.

AUGUST — SEPTEMBER, 1910.

1. *BURCKHARDT, H. *Bacteriologic Investigations on Surgical Tuberculoses. A Contribution to the Question of the Difference of Tuberculosis in Man and in Animals.*
2. KÖRBER, K. *Injuries to the Semilunar Cartilages of the Knee-Joint.*
3. KÖHLER, O. *Isolated Evulsion of the Crucial Ligaments of the Knee-Joint.*
4. *GANGITANO, F. *Peritonitis and Abdominal Phlebosclerosis with Desquamative Endotheliosis of Traumatic Origin.*
5. KRAUTZ, W. *The Treatment of Typical Radial Fracture.*
6. MATSUOKA, M. *Joint Disease in Tabes Dorsalis.*
7. *DILG, P. *Contribution to the Knowledge of Congenital Hypertrophic Pyloric Stenosis of Infants and Its Treatment.*
8. DANN, W. *Intestinal Stenoses Produced by Secondary Carcinomata.*
9. KAUSCH, W. *Resection of the Bodies of the Lumbar Vertebræ.*
10. ESAU. *Contributions on Appendicitis, Especially Differential Diagnosis.*
11. *TAVEL, E. *Technic and Indications of Endothyreopexy.*
12. MAKKAS, M. *Bilateral Inguinal Hernia of the Uterus.*
13. STIERLIN, E. *Movable Cecum as Cause of Many Cases of So-Called Chronic Appendicitis. The Results of Colopexy.*
14. KRÜGER. *Cosmetic Operation for Tuberculosis of the Cervical Lymph Nodes.*
15. *V. SCHILLER, K., AND LOBSTEIN, L. *The Value of the Simple Continuous Vessel Suture, including the Entire Vascular Wall.*
16. EICHMEYER, W. *Brief Report on 120 Operations on the Biliary System Performed during the Past Year.*
17. LOFARO, P. *Endothelioma Developing on a Dermoid Nevus.*
18. JIANU, A. *Decompressive Craniectomy.*
19. JIANU, A. *Colo-Ilio-Cecal Herniæ.*
20. SOLIERI, S. *Blood Cysts of the Spleen.*
21. ELS, H. *An Avulsion-Fracture of the Tibialis Anticus Insertion.*
22. KNOKE. *Contribution on Inward Dislocation of the Foot.*
23. SUDECK, P. *Speech Canula after Total Extirpation of the Larynx.*
24. SUDECK, P. *Symmetrical Neurotic Gangrene after Lumbar Anesthesia.*
25. SUDECK, P. *Fibrous Pachymeningitis.*
26. SUDECK, P. *Observations on High Extirpation of the Rectum.*

1. From an extensive series of experimental inoculations in animals, and from a bacteriologic study of 49 cases of various forms of human surgical tuberculosis, Burckhardt reaches the conclusion that the tuberculosis of cattle plays only a very subordinate part in the production of tuberculosis in man and that the most available means for combatting tuberculosis should be directed primarily to the prevention of infection from human sources.

4. On the basis of a case of his own observation, and of similar cases which he cites from the literature, Gangitano describes as a clinical entity a condition of diffuse chronic peritonitis following trauma and associated with serious vascular lesions, especially of the venous system under the form of phlebosclerosis. The course is slow and progresses with ascites, so that it is not always differentiable from traumatic cirrhosis of the liver. With the extension of the peritoneal lesions, other abdominal organs may be involved. Associated with the phlebosclerosis may be a desquamation of the vascular endothelium, which the author regards as representing in all probability an irritative mechanical lesion following the peculiar conditions of the vessel walls produced by the disease process.

7. Dilg reports a case of congenital infantile pyloric stenosis successfully treated by operation, but in his discussion of the literature makes no reference to the work done on this subject by Scudder, Murphy and other American surgeons.

11. Tavel reports six cases of non-malignant goiter successfully treated by endothyreopexy, a procedure first described by Gangolphe. As a result of his experience, the author advocates the operation in complete bilateral degeneration of the thyroid, in recurrent struma after unilateral extirpation when there is paralysis of the inferior laryngeal or when the remaining part of the gland is degenerated, and in bilateral compression of the trachea when after extirpation of one side further prolongation of the operation is inadvisable. The technic consists of (1) provisional or permanent ligation of the superior thyroid and possibly central ligation of the inferior; (2) mobilization of the gland; (3) enucleation or partial resection thereof; (4) isolation and suture of the stump in a pocket between the sterno-cleido-mastoid and the skin, with stitches through the fascia and the tendinous portion of the muscle; and (5) drainage and suture of the skin.

15. The authors, presenting the results of their research in experimental vascular surgery, recommend the use of a simple continuous silk suture, including all the coats of the vessel, in the repair of traumatic vascular defects. By this means they obtained 40% of successes in arterial suture and 60% in venous. Small arteries and large veins gave better results than large arteries and small veins. In losses of vascular substance up to 2 cm. in extent, they advise mobilization and approximation of the ends and union by circular suture; but if the loss exceeds this amount, they prefer vessel transplantation. Six months after the termination of their experiments they had observed no formation of aneurysm at the site of a suture. [R. M. G.]

BULLETTINO DELLE SCIENZE MEDICHE.

SEPTEMBER, 1910.

1. FORNI, G. *The Anatomic and Histologic Alterations in Experimental Exclusion of the Small Intestine.* (Preliminary note).
2. LAVERMICOCCA, A. *Behavior of Fat and of Glycogen in the Cartilages following Section of the Nerves.* (Preliminary note.)
3. OLLINO, G. *Variations of the Hematologic Formula in Animals Splenectomized and Treated with Quinine.* (Preliminary note.)
4. SERRA, A. *Experimental Researches on Necrosis of the Bones following Freezing of the Limbs.* (Preliminary note.)
5. *UGOLINI, G. *The Alterations of the Testicle following Section of Its Nerves.* (Preliminary note.)
6. BOSELLINI, P. L. *Lymphodermia and Mycosis Fungoides.*

5. From a microscopic study of the testicles of adult rabbits before and at varying intervals after section of the

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nerves supplying them, Ugolini finds a decrease of the spermatogenic and an increase of the interstitial cells of the gland following such section. In the event of unilateral section there is compensatory hypertrophy of the remaining side. [R. M. G.]

## Miscellany.

### LIGHT LABOR FOR CONSUMPTIVES.

In one of our daily papers there recently appeared the following item relative to the value of light labor in the treatment of pulmonary tuberculosis:

"An interesting matter wherein English institutions differ quite a little from those in this country is the arrangement of some kind of light labor for tubercular patients. The Frimley Sanitarium of Middlesex is an example of this method. The patient on arrival is given the easiest kind of work, such as the carrying of a light basket of stones a certain distance each day, preceded perhaps by some regulated amount of walk. If this work produces a rise of temperature and reaction, the patient is put to bed with absolute rest. It is found that the anti-tuberculin generated by this rise of temperature has usually made the patient more resistant, so he is able then to do the work that caused the temperature. On resuming work the amount of his labor is gradually increased until before the patients leave the hospital it is no unusual thing for them to be able to labor six hours a day with pick and shovel. The patients have done extensive landscape gardening about the grounds and have built an excellent concrete reservoir. They take care of the animals about the place and do a great deal of the work about the house. It is believed that the morale of such patients is higher than that of those taking the cure of absolute rest."

A few days later there appeared as a reply in the same paper, a letter by Dr. Arthur T. Cabot, chairman of the trustees of the Massachusetts Hospitals for Consumptives, the concluding paragraphs of which seem also to deserve republication:

"It will doubtless be of interest to your readers to know that the trustees of the Massachusetts Hospitals for Consumptives, who have under their charge the four sanatoria, containing eight hundred beds, in this state, have from the outset fully recognized the important part that work plays in promoting the cure of consumption. Following in the footsteps of Dr. Paterson, who did pioneer work in systematizing the introduction of this treatment and in pointing out the scientific basis on which it rests, they have encouraged their superintendents to introduce it in the institutions under their charge.

"The superintendents met with some difficulty at first owing to the mistaken idea among the patients that rest is the important factor in treatment for those who were comparatively well, just as it admittedly is for those who are very sick and feverish.

"This error is rapidly disappearing under patient explanation, and the convalescents now have occupations adapted to their strength, which promote their cure and put them in fit physical condition to take up their ordinary habits of life when they leave the sanatorium.

"It is greatly to be hoped that the local boards of health and anti-tuberculosis societies will keep a watch over the arrested cases that go out of these institutions; will see that they get work suited to their condition and that they continue the open-air life which is of such importance in preventing a relapse.

"Whether this work is done thoroughly or not depends largely on the people. They must see that the anti-tuberculosis associations and committees have enough funds to enable them to employ nurses to keep up a supervision of these cases, and they must make sure that active men enlightened in matters of hygiene are selected for the boards of health."

For an interesting and somewhat detailed account of the system in vogue at Frimley we refer readers to our Paris Letter of Feb. 10, 1908.

### AMERICAN SOCIETY OF MEDICAL SOCIOLOGY.

The American Society of Medical Sociology has recently been formed in New York by a number of physicians "for the purpose of investigating the social causes of disease and other problems of a medico-social nature." Dr. Abraham Jacobi has been elected honorary president of the society, Dr. William J. Robinson its president, and Dr. James P. Warbasse vice-president.

Among the topics already suggested for study by this society are occupation and trade diseases, the relation between the stress of modern life and the increase of insanity, food adulterations and their influence on health, tuberculosis as an economic disease, the probable causes of cancer, the alcohol problem, the causes and prevention of infant mortality, the causes and control of quackery, marriage and divorce, eugenics, race suicide and venereal disease. Many of these, it will be observed, are already under investigation by more limited special societies.

## Correspondence.

### THE ADVISABILITY OF THE ESTABLISHMENT OF A STATE HOSPITAL FOR CASES OF NERVOUS BREAKDOWN.

Boston, Nov. 27, 1910.

*Mr. Editor:* In the issue of the Journal of Nov. 24, there appears a short article entitled "Desirability of a State Psychopathic Hospital," in which the writer seems to have confused the suggested state hospital for cases of nervous breakdown, in regard to the advisability of which the hearing was held, with the Boston Psychopathic Hospital which the state has already voted to establish in connection with the Boston State Hospital. The suggested hospital for cases of nervous breakdown, while it might admit cases of border-line psychoses, would include more especially those cases of nervous exhaustion which have been known to the profession under the names of neurasthenia and psychasthenia, and would not intentionally contain any insane.

I enclose a copy of the resolve under which the commission was created.

Very truly yours,
William N. Bullard, M.D.,
*Secretary of the Commission*

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## RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, NOV. 19, 1910.

| CITIES. | Reported deaths in each. | Deaths under five years. | CITIES. | Reported deaths in each. | Deaths under five years. |
|---|---|---|---|---|---|
| New York | — | — | Waltham | 5 | 0 |
| Chicago | 632 | 159 | Pittsfield | 5 | — |
| Philadelphia | — | — | Brookline | 5 | — |
| St. Louis | — | — | Gloucester | 9 | 1 |
| Baltimore | — | — | North Adams | 8 | 1 |
| Cleveland | — | — | Northampton | 7 | 1 |
| Buffalo | — | — | Chicopee | 5 | 2 |
| Pittsburg | — | — | Medford | 3 | — |
| Cincinnati | — | — | Beverly | 4 | 1 |
| Milwaukee | — | — | Leominster | 3 | 1 |
| Washington | — | — | Hyde Park | 8 | 1 |
| Providence | — | — | Melrose | 1 | 0 |
| Boston | 211 | 49 | Newburyport | 5 | — |
| Worcester | 35 | 10 | Revere | 4 | 1 |
| Fall River | 34 | 11 | Westfield | 5 | 2 |
| Cambridge | 34 | 8 | Woburn | 2 | 1 |
| Lowell | 42 | 15 | Peabody | — | — |
| New Bedford | 24 | 11 | Marlboro | 2 | 0 |
| Lynn | 27 | 8 | Attleboro | 2 | 1 |
| Springfield | 26 | 5 | Adams | 3 | 1 |
| Lawrence | 25 | 10 | Clinton | 2 | 1 |
| Somerville | 22 | 4 | Gardner | 2 | 1 |
| Brockton | 8 | 2 | Milford | — | — |
| Holyoke | 15 | 10 | Watertown | 1 | 0 |
| Malden | 9 | 1 | Plymouth | — | — |
| Chelsea | 9 | — | Southbridge | 1 | — |
| Newton | 7 | 1 | Weymouth | 1 | — |
| Salem | 6 | 1 | Framingham | 3 | 1 |
| Haverhill | 12 | — | Wakefield | 2 | — |
| Fitchburg | — | — | Webster | 0 | — |
| Everett | 7 | 2 | Arlington | 1 | — |
| Quincy | — | — | Greenfield | 1 | — |
| Taunton | 17 | 4 | | | |

## LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND OTHER OFFICERS OF THE PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDED NOV. 16, 1910.

GASSAWAY, J. M., surgeon. Leave granted Oct. 14, 1910, amended to read twenty-four days from Oct. 7, 1910.

WHITE, J. H., surgeon. Granted ten days' leave of absence from Nov. 11, 1910.

NYDEGGER, J. A., surgeon. Granted one month's leave of absence from Nov. 10, 1910, on account of sickness.

SPRAGUE, E. K., surgeon. Leave of absence granted Oct. 14, 1910, amended to read four days from Oct. 28, 1910.

GRUBBS, S. B., passed assistant surgeon. Granted twenty-one days' leave of absence from Nov. 7, 1910, on account of sickness.

FOSTER, M. H., passed assistant surgeon. Granted seven days' leave of absence from Oct. 3, 1910, under paragraph 191, Service Regulations.

KORN, W. A., passed assistant surgeon. Directed to proceed to Pittsburg, Pa., upon special temporary duty. Nov. 7, 1910.

EARLE, B. H., passed assistant surgeon. Granted three days' leave of absence en route to station.

ROBERTS, NORMAN, passed assistant surgeon. Granted two days' leave of absence from Nov. 7, 1910, under paragraph 191, Service Regulations.

SMITH, F. C., passed assistant surgeon. Granted seven days' leave of absence from Nov. 3, 1910, under paragraph 191, Service Regulations.

SPRATT, R. D., passed assistant surgeon. Granted seven days' leave of absence from Oct. 14, 1910, under paragraph 191, Service Regulations.

COFFEE, JOSEPH H., acting assistant surgeon. Granted ten days' leave of absence from Nov. 5, 1910.

HAMILTON, H. J., acting assistant surgeon. Granted four days' leave of absence from Nov. 4, 1910.

SCHUSTER, B. L., acting assistant surgeon. Granted twenty-two days' leave of absence from Nov. 7, 1910.

STUART, A. F., acting assistant surgeon. Leave of absence granted for thirty days from Oct. 1, 1910, amended to read thirty days from Oct. 4, 1910.

WALKER, T. D., acting assistant surgeon. Granted eleven days' leave of absence with pay and one day's absence without pay from Nov. 7, 1910.

WALKLEY, W. S., acting assistant surgeon. Granted two days' leave of absence from Nov. 4, 1910.

WETMORE, W. O., acting assistant surgeon. Granted two days' leave of absence, Oct. 10 and Oct. 30, 1910, under paragraph 210, Service Regulations.

WHITE, R. C., acting assistant surgeon. Granted thirty days' leave of absence from Nov. 7, 1910.

SCOTT, E. B., pharmacist. Granted four days' leave of absence, without pay, from Nov. 9, 1910.

TROXLER, R. F., pharmacist. Granted one day's leave of absence, Oct. 30, 1910, under paragraph 210, Service Regulations.

HOLT, E. M., pharmacist. Granted two days' leave of absence from Nov. 7, 1910, under paragraph 210, Service Regulations.

STIER, CARL, pharmacist. Granted one day's leave of absence, Oct. 31, 1910, under paragraph 210, Service Regulations.

## RECENT DEATHS.

DR. FREDERICK LARKIN, a retired physician of Randolph, Cattaraugus County, N. Y., died on Nov. 24, at the age of ninety-seven years.

DR. JOSEPHUS REGUS, who died last week at Rochester, N. Y., was born in 1832. He was a dentist by profession, but was also well known as a student and inventor of rapid-fire ordnance.

DR. ALVAH C. VAN SYCKLE, of Hackettstown, N. J., died suddenly from cardiac disease, on Nov. 22, while attending a meeting of the Warren County Medical Society. He was a prominent citizen of Hackettstown and had served as mayor of the city.

DR. DUDLEY PAGE COTTON, who died at Roxbury last week, was born in the Barbadoes, West Indies, in 1849. He was educated at St. Paul's School, Concord, N. H., and at Trinity College, Hartford, Conn., from which he received the degree of A.M. in 1871. Subsequently he studied medicine at the University of Edinburgh, Scotland, and served for a time at the Royal Maternity Hospital in that city. On account of ill health he never undertook the general practise of his profession, but became a student and traveler. He lived for many years in London, and also at Dresden, Germany. He is survived by two sisters and four brothers. He was unmarried.

DR. STEPHEN GUERNSEY COOK, of New York, died on Nov. 21, in the eightieth year of his age. He was born in Dutchess County, New York, and was graduated from the medical department of the University of the City of New York in 1857. During the Civil War he served as surgeon in a Dutchess County regiment, and at the close of the war located in New York. He was appointed a police surgeon in 1873, and for many years was president of the police surgeons' board. He was one of the founders and incorporators of the Medical Association of the Greater City of New York, and at the time of his death was president of the West Side Savings Bank.

DR. WILLIAM ROBERT BROSS, of New York, medical director of the Equitable Life Assurance Society, died from cerebral apoplexy, on Nov. 21, at his residence at Babylon, Long Island. He was a native of New York City and fifty-six years of age, and was graduated from the College of Physicians and Surgeons in 1881. Going to Central America, he served for several years as port health officer at Port Limon, Costa Rica, and later as consulting commissioner on yellow fever in South America. Dr. Bross joined the staff of the Equitable Life as assistant to Dr. Edward Lambert, the medical director, in 1889, and at the latter's death was appointed senior medical director.

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**Was'ser-mann's reaction** or **test.** The application of the principle of the FIXATION OF COM- MENT to the diagnosis of syphilis. T' employed is as follows: (1) a ' is obtained and deprived heating to 60° C. f- sion is mad- sheep'-

**Mo'ro's reaction.** A reactive inflammation produced by the local application of a 50% tuberculin ointment upon the skin of those suffering from infection with the tubercle bacillus. ☞ CALMETTE'S REACTION; PIRQUET'S REACTION.

**An-ti-op'so-nin.** A constituent of normal human serum antagonistic to the OPSONINS. ☞ ANTIGEN.

Blastemal
Blastematic
Blastemic
Blostocardia
Blastocœlic
Blastomycetic
Blastomycotic
Blastoporic
Blastulapore
Blazing star
Blechropyra
Blechrosphygmia
Blemmatrope
Blennazemia
Blennelytria
Blennemesis
Blennenteria
Blennenteritis
Blennochesia
Blennoid
Blennoma
Blennometritis
Blennometrorrhœa
Blennophthalmia
Blennoptysis
Blennorsan
Blennosalyl
Blennosis
Blennotorrhœa
Blennurethria
Blennymenitis
Blepharadenes
Blepharecopeus
Blepharedema
Blepharelosis
Blepharemphysema
Blepharocleisis
Blepharodyschrœa
Blepharœdema
Blepharomelasma
Blepharophthiriasis
Blepharophyma
Blepharorrhœa
Blepharospath
Blepharosymphysis
Blepharosyndesmitis
Blights
Blinking
Bloat
Block teeth
Blot's perforator
Blown meat
Blow-pipe
Blutan
Böhmer's hæmatoxylin
Böhm's method
Bohea
Boisragon pills
Bolbomelanoma
Bombax
Bombic acid
Bombus
Bombyx
Bombyx mori
Bonwill's crown
Borago officinalis
Borborus
Borofuchsin
Boronatrocalcite
Borotartrol
Borrago
Borras
Bothrium
Botryomycetosis
Botryosteophyte
Bottine
Boucnemia
Bourdonnement amphorique

**OTHER LISTS** *in Medical Record, Annals of Surgery, New York State Journal of Medicine, Illinois Medical Journal, Medical Times, Journal of the American Medical Association, Interstate Medical Journal, Canadian Journal of Medicine and Surgery, Pennsylvania Medical Journal, The Southern Medical Journal, Medical World, Lancet-Clinic, Kentucky Medical Journal.*

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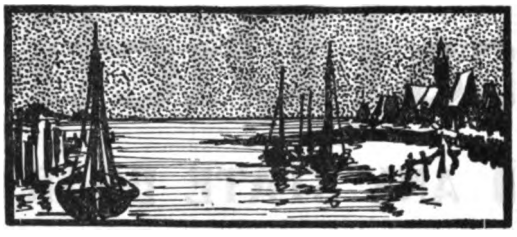

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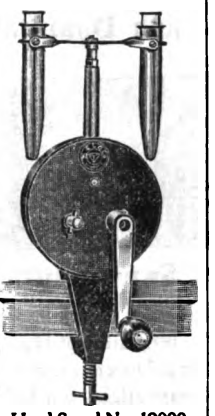

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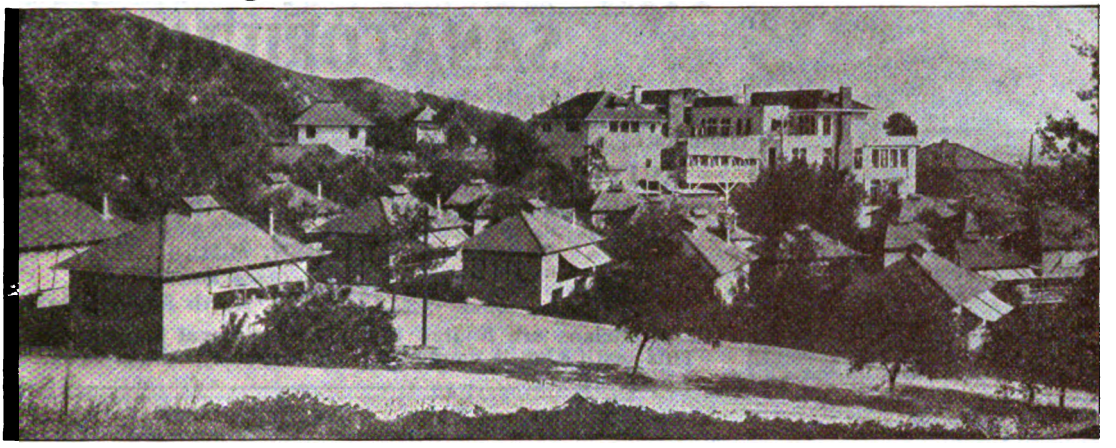

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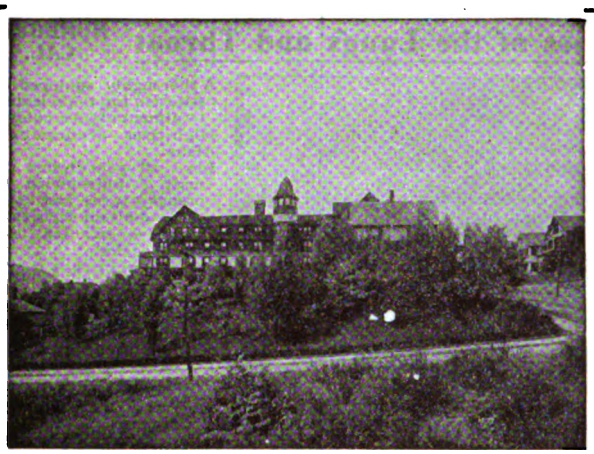

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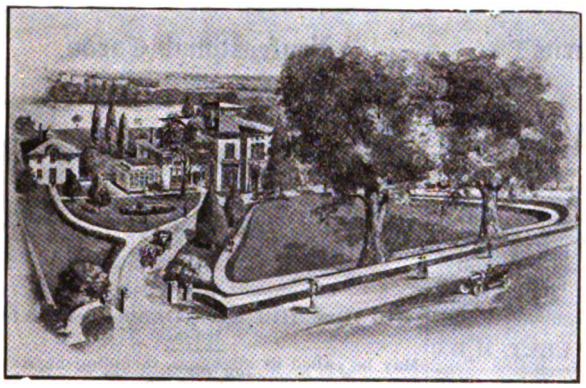

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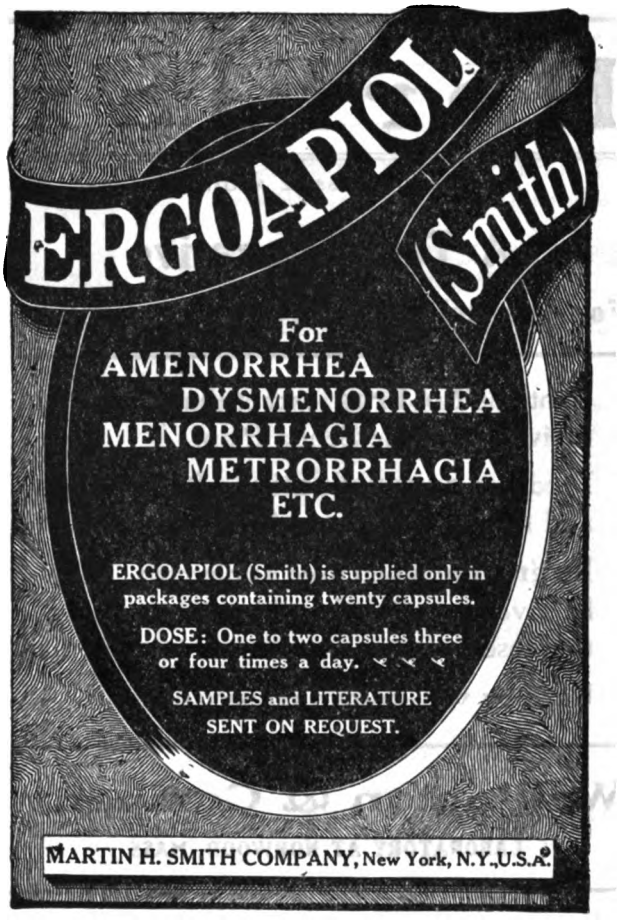


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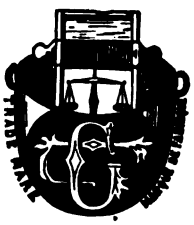

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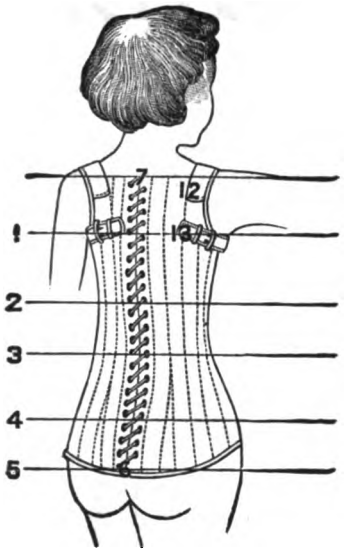


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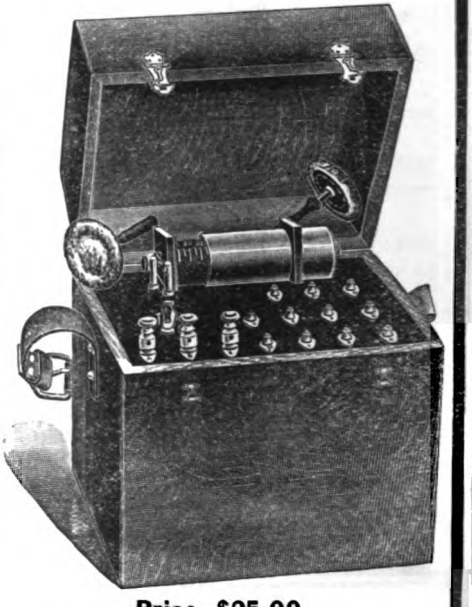

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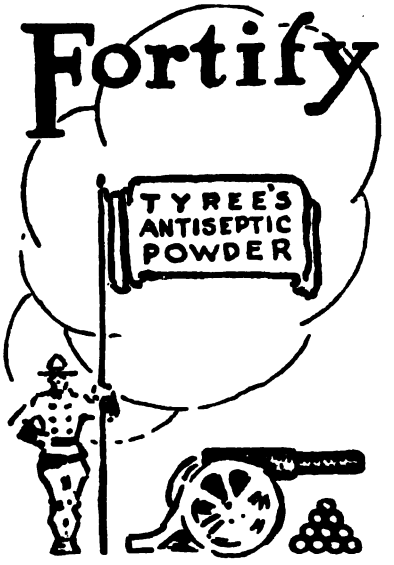


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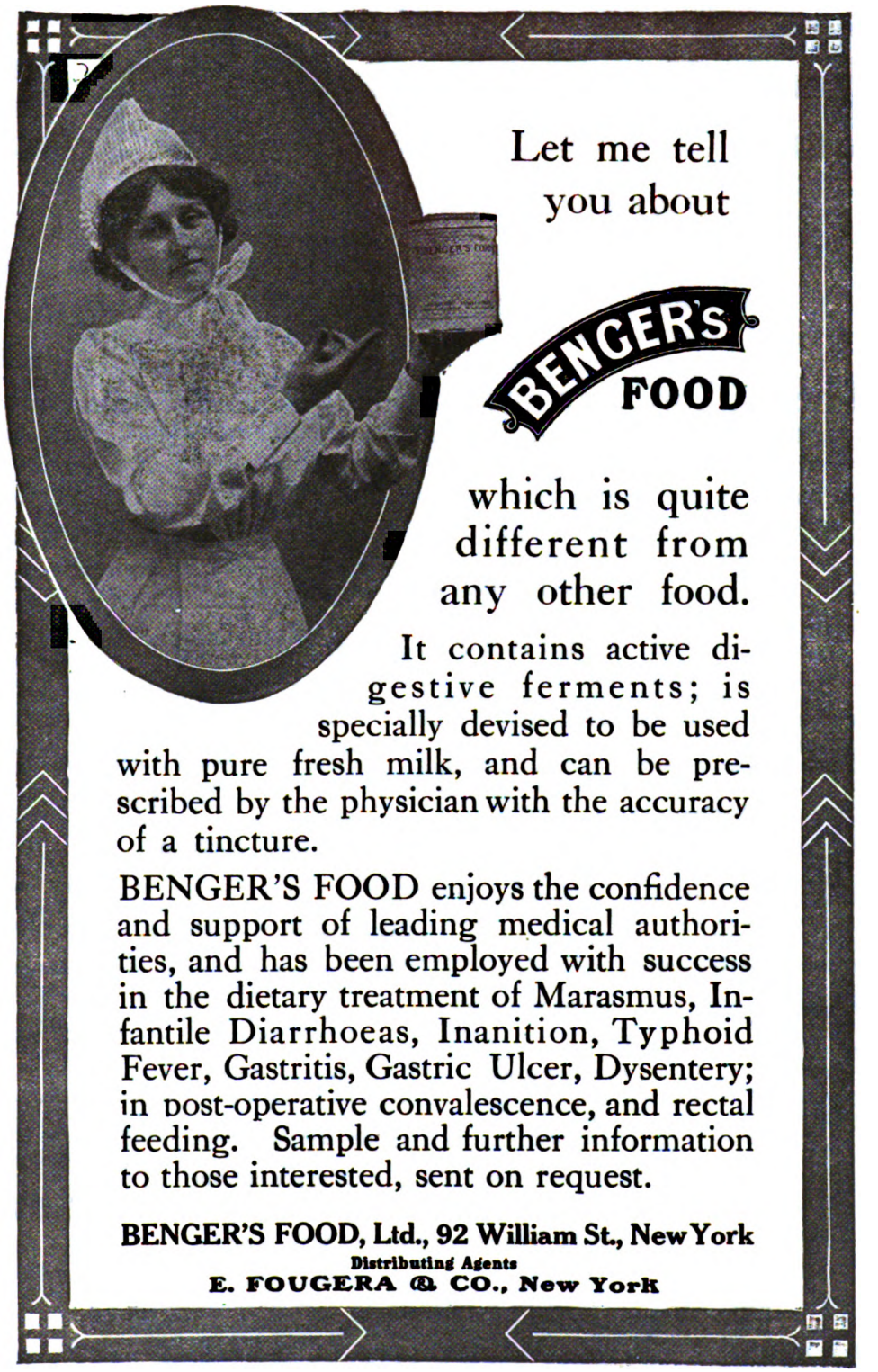


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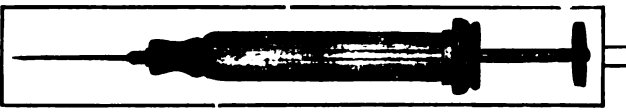

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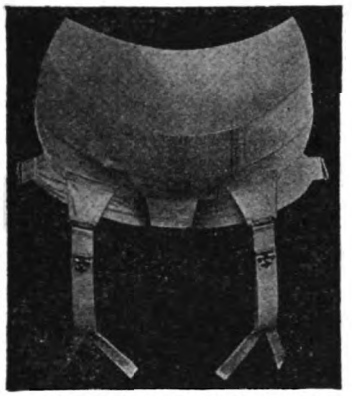

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## Original Articles.

### "WHAT MEDICAL SOCIETIES CAN DO FOR THE HEALTH OF THE PEOPLE." *

BY JOHN RITCHIE, JR., BOSTON.

The question has been asked of me, "What can a Medical Society do for the health of the people?" This question I am going to try to answer in part this evening, and from the point of view of the layman. And worse than this even, like the reviewer of a book who lets no peep into its pages prejudice his mind with facts, I have not sought to know the precise purposes of the Suffolk District Medical Society, and have asked for no glance at its constitution or by-laws, but have constructed my own society, and this from the layman's point of view as to what such a society should be.

While I was a member of the Board of Health there were times when it seemed to me as if the influence and authority that such a society ought to wield might have been an important factor towards the rational consideration of important questions.

For a point of beginning, let me present to you the status of the health of Boston, for that is the locality in which we all are interested and in which the work of a local society would begin. The lantern slides will present a general view of health conditions past and present and will afford an opportunity to note in a way where advances are needed and where they may be made.

Let me say here at the outset that Boston has no occasion to be cast down in the least about its health conditions. There has been some wild statement now and then that it is not in line with other great cities in the country and that radical changes ought to be made in the methods, and it has even been suggested that if this city is to be abreast of its sister cities in the country it will be necessary to import some sanitary leader to show Boston physicians what to do. Of course there may not be foundation to such statements, but they have been current in the newspapers, and it has even been stated that a former mayor was in Washington on precisely such an errand.

It would need much more than an evening to follow out the figures that establish the condition of the health of Boston in its comparison with those of other cities. This is not a sum in simple subtraction; it is quite a complicated problem, and the editor who wrote for a Boston paper, "The health of Boston is mediocre; not so good as that of Chicago or New York," would have difficulty in getting a true statistical basis for so sweeping a statement. A society of this kind should, it seems to me, have a true knowledge of the health figures of its home city.

With reference to the imported sanitary leader, I shall have more to say anon, but it seems to me that here is precisely the kind of question that an authoritative local society could consider intelligently and with which it ought to be thoroughly competent to deal, if it is willing to devote sufficient time to it, in the interests of the public good.

But to come to the sanitary story of Boston. Here are a few diagrams presenting some of the larger conditions, prepared by me for my own personal study.

[There followed then a series of five lantern projections presenting graphic diagrams of the vital statistics of Boston. These were the general and steady decline in the mortality-rate from all causes, the great decline in the death-rate for the common infectious diseases, the decrease in deaths from tuberculosis and the status of infantile mortality, i. e., of children of less than one year of age.]

Here, then, are the health conditions of Boston; what can a society like this do to improve the record? It is evident that it must come among the refinements of mortality work, for the coarser problems have all been considered, and with a success that you may judge of by the diagrams. Now what is there in the way of betterments to a pretty good condition that a society like this can help effect?

And I would like to interpolate here that this condition of health rates is due to the good judgment of the helmsman who has guided for more than a third of a century the actions of the Board, and it is creditable that in that time no serious mistake has been made. There has been lots of adverse criticism on the part of the press and individuals, and what has been done has not always had the full approval, in fact, has evoked the opposition of some medical men, but when from a secure future one has looked back on the course of the Boston Board of Health, it will be evident that almost every important sanitary advance for the country has had its initial point in Boston. I can say this without self-praise, for my brief relationship with the Board was too short for me to leave an impress on its actions or to be entitled to much of any credit for its good works.

It is perfectly true that Boston seems at times to be behind some other cities, but there are two things here to be remembered: that a good health officer must be conservative and not be carried away by the fads of the moment, and, again, that Boston is spending but thirty-three cents per capita per annum for its health, while other cities have found the means to expend much more.

There is the story in which you gentlemen, as physicians, ought to have interest and pride, for it is upon you, in the final analysis, that the responsibility must rest. It is true that there is a Board of Health, and it may seem to be wielding despotic power and be arbitrary, but it can act only with the support of the intelligent men of its community; its work on the whole cannot be maintained above the standard of the medical men and the citizens who support it. The function of a Board of Health, in a number of aspects, is admirably stated in the June Bulletin of the Massachusetts State Board, which says, "The medical profession must remember that the Board of Health acts only as the agent of the

* Read at the meeting of the Suffold District Medical Society, Oct. 29, 1910.

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profession in assembling the data provided by them, and depends upon them for their willing co-operation."

Now, gentlemen, there is the nub of the whole matter, and in ratio to the faithfulness with which you perform your part, the success of the whole will be assured. And here my own personal opinion comes in, that while the counsel and aid of individual physicians is always given to the officials, still it seems to me that it ought to be a function of just such societies as this to give the same kind of support better and more forcefully and with a stronger impression on the public.

In my humble opinion a great and representative society like this ought to be a support to those who are in the leading health places. It ought to know what is being done; it ought to be in touch with the work; it ought to know something of the financial requirements. It ought to be ready and willing to give its advice when advice is needed, and also its firm support. It ought to be able to give an opinion from which all petty and personal conditions have been eliminated, and it ought not to be slow in coming forward with that opinion when the opinion is timely.

A group of public officers finds itself subject to all kinds of attacks and from many quarters; a group of health officers in particular is subject to such attacks. In Boston there have been times when the Board of Health has had its work and its methods called into question by those who had no knowledge or appreciation of the true facts, but who are persistent in their warfare. Where the work has been as faithful and as creditable as it has been here, criticism of the kind is wicked, for constant dropping will wear the stone. Inertness on the part of medical men, inactivity of societies that might have given authoritative support to the right, are responsible in part for this.

Now let us get to direct consideration of some of the matters that have thus far been merely suggested. There is the membership of the Board of Health. It is most important, and yet, so far as concerted action by medical men is concerned, it has been practically neglected. Occasionally some progressive physician individually recommends or supports his man. It is true that, as a principle, medical bodies have no place in politics, but the Board of Health of a municipality ought to be far above politics. It has responsibilities that transcend the usual considerations and demand the services of the best men. This fact will be appreciated by the people just in ratio to the extent that medical men themselves appreciate it. If they are themselves watchful of the best health interests of the community, they will have the right to be watchful over the personnel of the group of men who have the health of the community in their keeping.

I believe that it is possible for a society like this, the segregation of the best thought in the medical work of a great city, so to speak that it will make itself heard; and, being heard, impossible to be ignored. A society like this, it seems to me, ought to abandon the principle, not to speak till spoken to and not to give advice till asked, but should be ready to present its opinions well digested and matured at the proper time.

There has been a great deal of talk backwards and forwards about importing a sanitarian for the chairman of the Board of Health, of a single head, of reorganizing, and divers other radical changes. These are all of them, it seems to me, matters in which a society like this ought to be a leader and a maker of opinion. It ought to formulate its own opinion first, and this ought to be expressed.

The proposition to import a chairman, it seems to me, is an important one for just such a society to discuss. Here was a slap in the face to the whole medical profession of Boston, an assertion that, notwithstanding its Institute of Technology, its medical schools and its thousands of skilled physicians and sanitarians, there was no one among them all competent to be chief medical and sanitary executive. Other places are pulling away from Boston men to put at the head of important sanitary work, and Boston has lost such leaders as Hill, Rickards and Slack, and no one has said "Boo." Then, when seemingly through the authority of an executive it was said, "We propose to seek elsewhere for a sanitarian, for Boston has none competent," the whole medical fraternity pocketed the affront. To me as a layman the situation was extraordinary and I watched the columns of the medical journals for some sort of reply.

There are a good many questions pertaining to public health that come to be subjects for legislative consideration. I think that here a society like this could work much benefit by telling the truth. Last year there was a discussion about meat from tuberculous cows. There was a good deal of misinformation abroad; it was a question where the definitions were antiquated, where new ones are necessary and where distinctions are not well understood by the laity, who freely discuss and act on such things, and there were opportunities for misinterpretations. A few men stood forth for the right as they understood it before legislative committees, but they were individuals and voiced only their own personal opinions. A society like this, it seems to me, could have clarified the matter and, with a reputation behind it, could have formulated an opinion that no legislature could misunderstand.

I do not know that the Suffolk District Medical Society is yet in a position to do this, because it may not have yet acquired that reputation in its own country as a prophet and adviser that would make its opinion acceptable. But I know that it has all the factors to such a reputation. Is it not your duty to your home city, that, being such a society, with such possibilities, you exercise what are your rights? Other societies do such things, and some of them are now quoted far and wide. You can, if you wish, become the authority for a country by no means limited by your own Suffolk district.

A little while ago it was the question of the quality of the milk supply of the city of Boston. You know, and I know, that, by the standard

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cities of its class, it is good. I know that it is probably as good as that of any large city in the country and difficult to improve save at greatly increased cost.

Now in this movement a leader has arisen who is anxious to put into force a system of inspection of the farms, "so that," he is quoted in the newspapers as holding, "the germs of infectious disease may be kept out of the supply." Supposing that a great society could say officially that until a physician can be maintained at every milk-producing farm, there is a possibility that infection may creep in at any time, the situation would certainly be clearer. No matter what it said, if it had the authority behind it and the confidence of the community, it would have influence for the right.

Suppose a society with reputation and authority had said, "The ultimate test of the quality of a milk supply is the infantile mortality; Boston heads the list of cities in this country in this respect," would it not have been a statement not to be disputed? But if I say it, and I have said it with all the force that I, personally, have been able to carry, I am but a man, conceited in his own ideas.

Just now it is the question of pasteurization of milk. There is here a problem in sanitation for which at the moment I see but one solution. I believe a proper pasteurization to be the only present means out of the difficulty of milk infection. It is going to meet with opposition; it is probable that medical men are not to-day nearly a unit in opinion, but it is a question of the very close future. This society ought to be formulating its opinion. It can have the advice of milk experts, it can get anything in the way of precise information that it wishes, and with these in hand it can have an opinion. This will not be the diversity that individuals cannot avoid, but one with the authority of a strong medical body behind it. In New York the experiment in milk has been made. It is said that Strauss was driven from his position by the opposition of a newspaper. If his position is truly a right one, and there had been a calm and authoritative medical society to back him, public opinion would also have been to the support of Strauss, and the backward step need not have been taken.

Thus far the considerations have been in the group that might be termed larger public questions, in which a medical society might stand as an adviser to the executive and law-making authorities of commonwealth and municipality, and incidentally aid in the education of the people. Let us now turn to a consideration of some of the matters wherein an association like this may help in the educating of its own members, by the presentation to them and to other members of the profession of certain plain duties towards the improvement of the public health.

I wish now to speak on a matter pretty directly connected with the diagrams — that of reporting. As is evident from the diminution of infectious diseases, the coarser methods of work have been pretty well tried out, and the advance of the future must be along lines of refinement. The reporting of cases is the most important present need in the warfare against infectious disease. It is the most essential feature in the fight at the bedside, which is the proper place for the battle as waged in these times. Philosophically considered, infectious diseases would absolutely cease could all the cases be isolated, and while this is impossible in practise, it is the desire of health officers to approach as nearly to this condition as may be possible. Here the authorities are absolutely at the mercy of the physician, for while there are laws compelling notification, it seems rather hard to make criminals of reputable physicians for what they, themselves, regard a peccadillo. And again, it is not so easy to press to conviction in a matter where the evidence is so technical and in which only the grossest violation could not be defended through lack of exact diagnosis or some such subterfuge. Notification seems to be, so far as many physicians are concerned, a matter in which personal opinion is entitled to much weight. I have had a good medical man whisper in my ear about the nonsensical notion of making further demands on the time of the physician by increasing the number of notifiable diseases. As the result of many factors, notification, while it is improving year by year, is not so well or so fully carried forward as it should be. The improvement must be by the education of the physician. There are many factors towards neglect; for example, the patient is a tuberculate, the family feels, as families usually feel, that it is a kind of disgrace, the individual shrinks from publicity and the physician fails to notify.

Here is a work in which a society like this can help enormously by creating an *esprit du corps*. The society as a society does not question the fact that notification is wise; it knows that no disease is added to the list without a great deal of consideration and discussion by the authorities. Individuals hastily question all these things, and, acting on their own impulses, anxious, perhaps, to please their clients, neglect notification. A society can help materially in improving the health conditions by making it popular to notify.

Anterior poliomyelitis is a notifiable disease and has been so for about eighteen months. It seems to be very imperfectly reported in Boston to the local Board of Health. Boston, in the second half of 1909, had 35 cases reported. The State Board of Health reports in the whole of 1909, in Boston, 299 cases. There is a discrepancy here. I have not thought it worth while to spend time locating this obvious neglect to notify. It is new to physicians, they are not used to reporting it, the state has wished especial information and has issued special circulars, and in notifying the state it is probable that physicians have thought themselves to be doing their whole duty. But in this there is needed a little bit of education. The fundamental notification is by law to be given to the local board, and the Boston Board of Health ought to bear on its books through notification from physicians all the cases within its limits. What the state or the individual chooses to carry

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on as a special investigation should not interfere with the legal notification.

Especial attention has this very week been directed by the typhoid committee of the Massachusetts Association of Boards of Health to the need of strict practise of notification. It is too often the case that the disease is taken as a matter of course, and little attention paid to it. The plea of the committee is broader than merely notification, and goes directly to urge treatment of typhoid fever as an infectious disease, and to have it recognized by physicians and boards of health for what it really is, — a great menace to the public health.

Incidental to notification, there is the care with which it is done, and thoughtful physicians may aid the authorities materially. The cards used in this city request certain facts about the disease and the patient and also the name of the milk dealer. There is nothing asked that is not of immediate importance, no fact that the physician may not easily get. Yet many cards are received deficient in some of the particulars. You can readily see how important the milk supply is, yet it is frequently omitted. You can see that if three or four cases of typhoid occurred on the route of the same milk dealer, they would attract instant attention and would demand precedence in examination, but the same three or four cases might not get correlated for some hours if the name of the milkman should be omitted from one or two of the cards.

Thoughtfulness on the part of physicians is important, since they are on the ground some time before it is possible for the public health officials to have information of any kind. There are things that a thoughtful man can do that may prove of service; for example, to select an obvious one, to immunize other children in a family in which diphtheria is found.

Early notification of births is another important matter and failure to give it at all is the weak link in the registry system in the country. If there is any thing in which American physicians in general need to be spurred on to their plain duty, it is in the notification of birth. As a matter of fact, this country, priding itself on its intelligence and its advancement, is practically without birth statistics. Chicago gets perhaps 65%, and Baltimore less than 45, while whole districts are exceedingly deficient. Such a condition of statistics is not creditable.

Boston is so much better than so many places, with its estimated 95% registered, that it might seem as if nothing further is to be said, the more so since it is estimated by the registrar that the registry of births attended by physicians is only 1% short. The recent school rule requiring birth certificates for all new scholars will probably make this small deficiency still less.

But in the advancement that leads to such good total percentage of registration, new chances to improve the public health open, and Boston can better its general health through bettering the health of its infants by quicker notification. The figure above given is that within the limits of the law, which allows the physician till the fifth of the succeeding month in which to send in his notification, but this is not nearly soon enough. If infantile blindness is to be prevented, the treatment must come immediately after birth. The physician who delays his notification runs risks for the child. It is well known that such things as the ignorance or carelessness of mothers is responsible for many infants' deaths. The whole infant situation would be bettered enormously could there be immediate inspection of the child and a proper system of education for the mother. It is as easy to send a birth notice from the letter box at the corner before visiting the next patient as it is to send it a week or two later, and this promptness is being more and more recognized as an essential factor to good health. And there is more in this than merely the infants' lives. Newsholme has traced, you will all remember, at the sanitary meeting in Brighton last month, that there is an intimate relation between the infantile mortality and the total death-rate. Everything that makes to save the lives of children of less than one year of age makes also for the saving of lives in all age periods.

It is important further to attend pretty closely to all kinds of registering that are required. The value of the statistics depend, in part, upon the faithfulness of the physicians in the different localities. To-day it is out of the question in the United States to make comparisons statistically of one city with another save during the limited times that an official census covers. Indeed, it is not always easy to compare the statistics of a city at different times with one another. The influence of a local society may be limited, it is true, to its own domain, but its example is never lost on similar societies. I think it perfectly possible for a society like this to bear a hand towards the raising of the statistical moral tone in other places. It is to be regretted that this tone is so low in this country, for statisticians must, perforce, be men of intelligence, but it is true beyond the question that commercial aspects of health figures are considered and eliminations are made for the benefit of the place, which hopes to attract trade or travel on account of its healthfulness. I question whether any medical society in the country has raised its voice against the immorality of "boosted" population figures or incomplete or manipulated returns on which the published rates are based. America has much to learn towards the improvement of its vital statistics, and societies like this can help greatly in establishing a healthy statistical tone in the community.

Incidentally I may say that there is much to be done in the way of unification of matters relating to the health. There is much need of the standardization of many factors. No two health reports in the country present the same data or in the same form, and it is often very difficult to find in a report the figures that another report will blazon forth on the first page. There is much looseness in terminology, many differences in spelling, while specialists delight in the use of the newest terms in their own divisions, which may readily not be

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in the Bertillon list or in the latest of medical dictionaries. There is very much to do in the way of such standardization, but it is a minor matter compared with so many others that I will not argue it just now.

Isolation is another important matter wherein physicians need a good deal of education. The child is well to the eye of the parent; he feels his confinement and is restless; he is anxious to get out of doors, to play with his fellows, but the time that experience has shown to be within the danger line to others from him has not passed. Pressure is brought to bear upon the physician, and he in his turn seeks to have the isolation terminated. The officials are firm, and there is ill-feeling and the authorities are declared to be arbitrary.

Now this is all a matter that ought to be pretty easy to determine, for the time for isolation for the different diseases ought to be well established and the symptoms known that suggest the release. If these things are wrongly figured, then by all means establish some other and more correct standard, but whatever may be the standard that medical authorities establish, let the individual physicians observe it. A society like this, by discussing such matters, by bringing the reasons to the attention of the physician, will give him an artificial backbone if he needs it, or may perhaps show him in a different light the righteousness of the conventional proceeding and make him see for himself the propriety of isolation to the agreed-upon limit.

So much for the higher education of the physician. Let us turn our attention for a few moments to matters in which the physician may help in the education of the people. One important side of this work is necessary because the public is quick to acquire ideas of certain kinds. There is an inherent fear of epidemics, and on the slightest pretext the people are alarmed and a panic results. Only this week there has been voiced at a meeting in Boston a plea that physicians shall bear a hand in allaying the panic over infant paralysis. There are similar occasions from time to time over diphtheria and other diseases. A calm and authoritative statement by a medical society circulated by the physicians and the press would be all-sufficient to induce the return of a sane and reasonable condition of the public mind.

One of the matters in which the information of the public will presently be necessary is disinfection. To the layman, it is the outward and smellable sign of a process of purification, and wherever the odor of its chemicals is to be detected, there is faith in a good work going on. From the brick that wastes away in a couple of months to the more formidable formaldehyde processes, the "disinfectants" come in enormous variety. For most of them undoubtedly soap and elbow-grease would be a more efficient substitute. The practise of disinfecting rooms and large spaces after sickness has grown up and is much in vogue. Is it necessary and effective, or is it, like sewer-gas, a relic left by the wayside by knowledge in its progress? It is costly; should it be used in selected cases? Here is a matter that is now in the air, and the balance seems to be settling against the large use of the process in rooms and houses. It is expected by the people, and if it is no longer useful, the people must be informed. Is it not a duty, in these advanced times, of a society like this to foresee the situation? It is in a position to catch the whisperings, and it might gather the threads of information, and, if a change is coming, it could help spread the news.

And in the same category is the typhoidal oyster. Fear of germs has robbed thousands of our citizens of a delectable food. For years no one has hinted otherwise than that the oyster and typhoid fever were linked in unquestioned brotherhood. At this moment the balance is turning, sanitarians are looking at the facts and questioning any real relationship save in a very few extraordinary instances. It is due to the people, when the time is ripe, that the decision, whether affirmative or negative, be given to the world in an authoritative way. Not by any mere paragraph in the newspaper picked up by the reporter or his necessarily hasty and superficial digest of a technical report, but by plain statements in plain English, backed by the name of a well-known medical society.

And as for the "typhoid fly," he has had a remarkable and sensational run in which medical men and bacteriologists have not hesitated to make of him a scapegoat and pile on his back all the ills that flesh is heir to. But I do not believe that in a well-sewered city, disposing fairly well of its sewage, he cuts much figure in the dissemination of disease. Perhaps some tuberculosis may be carried by him here. But although I speak of the fly in this way, I am not taking his part, for he is a filthy beast equally at home in dining-room or muck-heap, and carrying the filth of street or alley to the food. Get rid of the fly by all means, but not under false and sensational pretenses. Fight him for what he is, a filthy nuisance.

Two most important technical processes related to public health are vaccination and animal experimentation. The former has its inveterate enemies who leave no stone unturned to oppose it and succeed in enlisting under their standard bodies of medical agnostics and even medical anarchists, so that together a good numerical showing can be made. Hardly a year passes without some anti-vaccination bill presented to the legislature. Usually The Massachusetts Medical Society presents a speaker in its defense, but in my opinion a much better showing should be made. In these enlightened times it would seem as if so evident a matter needed no backing, but the fact remains that there is an aggressive and persistent opposition which may best be met by an equally active support.

In all probability there is no other subject in medical work that is less well understood by the people than animal experimentation, which is always opposed by bitter antagonists, who are able to draw on the sympathies of tender-hearted

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people and secure their support. The unfortunate name that has for years been attached to it is against it from the point of view of the people. With the possibility of such an exhibition as that recently on view in New York City, said by those who have visited it to be inaccurate in presentation and misleading in deduction, medical societies should take it to heart that animal experimentation is to-day in need of all the support it can get. It would be unfortunate to have a law passed in our state forbidding the use of animals for experiment, including the diagnostic work, yet such a condition seems by no means beyond the bounds of possibility. I am of the opinion that such societies as this should be heard, and with no uncertain sound whenever opportunity permits, when so much is dependent and the opposition can present so formidable a front. Then through the members a proper view of the science can be given authoritatively to the people.

Now there are a goodly number of things that will benefit the public health all about us, in which public opinion must be formed. The drinking cup has been abolished in Massachusetts. It was not because any medical society recognized the danger and asked for the abolition, but purely through other influences. Medical men, of course, gave their opinions, but, as a matter of fact, the movement followed by some months or a year such a movement in the West. It is rather too bad that it could not have originated here, and it would have if there had been strong, influential medical societies interested and active and realizing the importance of the change.

There are a number of improvements of this kind that the country needs. For myself, I can think of no sanitary abomination more in need of reform than the railway closet. One can hardly credit that in a civilized community we have permitted it to exist so long, yet it is only the occasional individual voice that is raised against it. Its dangers are not unknown, for at a few localities the doors are locked while passing over some watershed that is used for the supply of a city. Let me picture it for you: A little box, probably unventilated unless by a window, which modesty seldom permits to be opened. No water flushes the hopper, which retains its filth perhaps to the end of the journey. The dejecta fall to the roadbed below, or catch on the chains by the way and by ingenious devices like this are spread far and wide. No water is convenient with which to wash the hands that not unlikely have come in contact with infectious matter. Just outside the door, on whose handle perhaps a few germs are left for the benefit of the next comer, there is the water tank. The individual fresh from his devotions to Cloaca grasps the handle — more germs — and drinks from the universal cup, if he be outside of Massachusetts or Kansas. I do not need to say another word, gentlemen. The railway closet, distributing its wastes over miles of roadbed, must go, and I think you are the kind of organization that can soonest make it go.

I wish for a moment to refer to a matter which it seems to me is worthy of attention as affecting the health of the larger communities of the country. In the superficial glance that I have been able to give over the sanitary needs of the country I have been particularly struck by the seeming lack of the study of tropical disease. This would seem to be one of the more important gaps in medical work in the country, where year after year some new foreign disease from the warm latitudes is found to be homed. There is pellagra and the hookworm, and no one knows what may be the next one to be found well established. With the present state of knowledge on the part of general practitioners, the chance of diagnosing such ailments, even in institutions, is not large, yet the discovery of the cases is important. It is very true that the unsewered and even un-outhoused condition of the South has given opportunity for parasites to make hosts of a barefooted people to an extent that in the North will probably never be possible, but the facts show that there has been much unrecognized tropical sickness in the countries of outdoor life, and if present conditions continue there will be much more. This is a living question of the near future and one that societies of this kind can well take up, for it involves large questions in matters pertaining to the education of the physicians who in their distribution over the country must infallibly come into contact with imported and ordinarily unfamiliar disease.

One cannot close the story of what societies and physicians stimulated by their associations can do for the education of the people without a word about sex hygiene. The false modesty precluding public mention of this matter, which has prevailed far back of the memory of any one here present, seems now to be on the point of giving way. Public-spirited men and women are leading the movement to present definite and trustworthy information in lieu of the older method of dissemination on the street corners with the air of secrecy by those who had no right to be teachers. To-day it would seem as if it is the layman who is in the forefront of the work. Does not this belong to the physician, fitted by his training and by his knowledge of the nature and extent of the dangers?

And directly in the matter of specific disease, there seems to be an important place for the physician as a public educator. He is not likely to take the initiative unless there is behind him the confidence and support of his confrères. A society furnishes these elements. And further still, although the enormous consequence of such diseases in the morbidity and mortality of the community is acknowledged, and although means of treatment have been devised, there is still to be worked out the practical way of presenting the whole matter to the people. This will, of course, be eventually worked out by the cut-and-try method that has in the past built up the sanitary systems. But are we not in another age? Is it not time to work in quicker fashion? Is there not here an opportunity for the many minds of a society, or, in fact, of many societies, to focus

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themselves on the problem and reach much more easily the methods that shall be of the quickest benefit to man?

And last of all there comes the question of the attitude of medical men towards the press, which is a matter for which the time is ripe, I think, for consideration. With the insistent progressiveness, not to say inquisitiveness, of the newspaper, and its resources, and the conservativeness of the physician, it is an irresistible force meeting an immovable body. But I do not believe the situation quite so desperate, and think that a society like this is thoroughly competent to discuss the subject and to arrive at a ground where the essential matters of consequence in medical discovery may be given to the people in an interesting and trustworthy manner.

# EXPERIMENTS ON TRANSMISSION OF BACTERIA BY FLIES WITH SPECIAL RELATION TO AN EPIDEMIC OF BACILLARY DYSENTERY AT THE WORCESTER STATE HOSPITAL, MASSACHUSETTS, 1910.*

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(Working in the laboratory of the Worcester State Hospital during August and September, 1910, by courtesy of the Superintendent.)

THIS investigation of an epidemic of bacillary dysentery at the Worcester State Hospital occurring in July and August, 1910, has been approached to first ascertain the causative organism;

*Read in part before the Boston Society of Neurology and Psychiatry, Oct. 20, 1910.

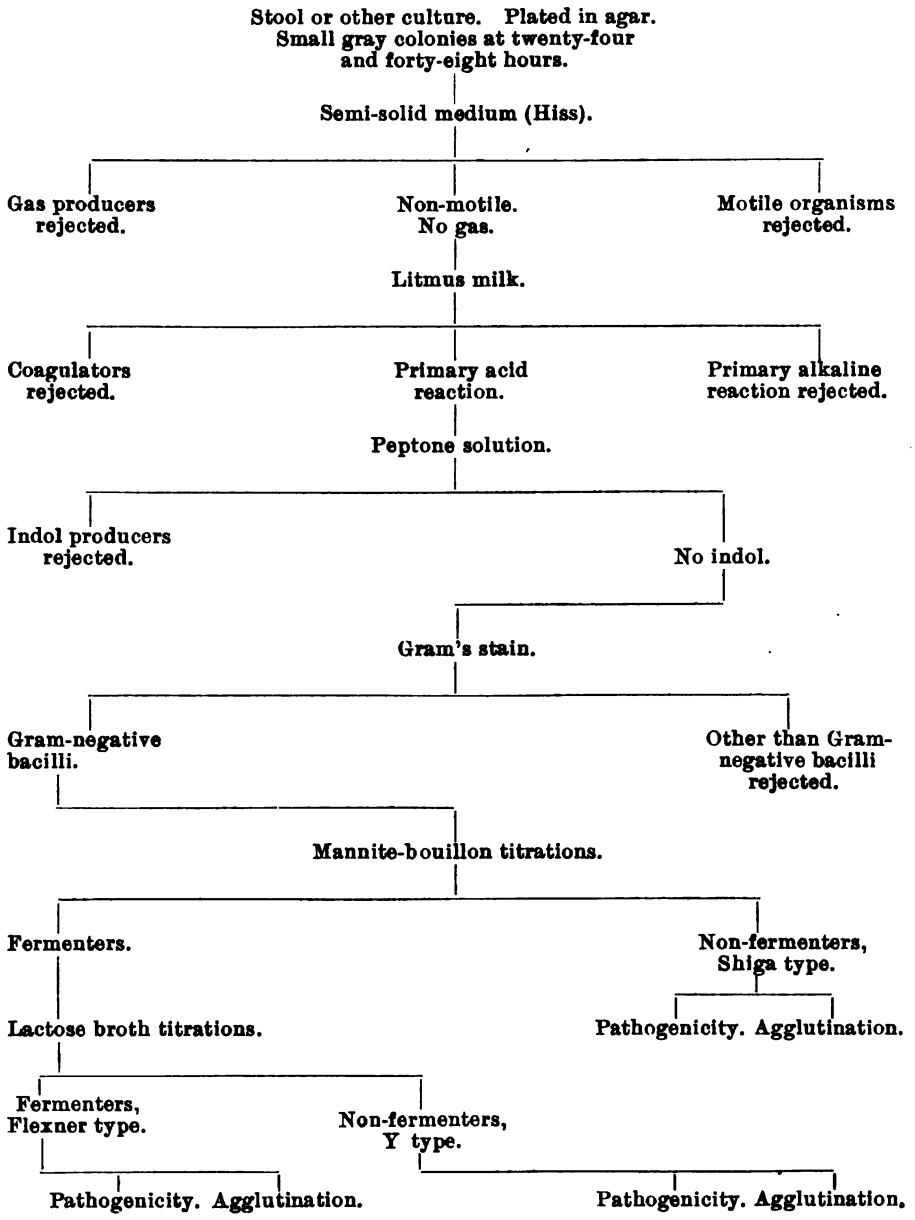


FIG. 1.

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second, the method of transmission from case to case, and, third, prophylactic measures against such transmission.

Our epidemic, consisting of 136 cases, resembled in type of incidence and spread that of the Danvers State Hospital, Massachusetts, 1909. The incidence was gradual and the spread scattering and irregular, no one ward or set of wards suffering in marked disproportion. This lack of the explosive type of outbreak applies against the theory of a water supply infection. The hospital receives its water from the Worcester city supply and such a source of infection can be practically ruled out by the lack of concomitant outbreak in the city. Milk infection may also be excluded on the grounds of lack of explosive incidence and by the fact that only certain of the diet cases receive raw milk and that no apparent relation exists between those on a raw milk diet and the cases infected. The infection of raw foodstuffs, i. e., vegetables, cannot be excluded, but here again a heavier incidence and more widespread epidemic would be expected.

The house fly has been receiving considerable attention of late in connection with the spread of intestinal infections, and its two favorite foods, i. e., fecal matter and prepared foodstuffs, make it a dangerous medium. Dr. L. O. Howard, of Washington, has been especially insistent on its potentialities in this regard and has christened it the "typhoid fly" with the hope of impressing its danger. The season of the epidemic seems to have been a favorable one for the fly, and they were present in and about the hospital in great numbers and are considered to have been the chief cause of the distribution of the organisms from case to case.

The first step in the investigation was the isolation and identification of the causative organism. The technic employed is best represented by the accompanying chart (Fig. 1), showing the steps of exclusion of other organisms and the data of biological reactions required in identification. The employment of the semi-solid medium of Hiss aids not a little in working with all the intestinal group by excluding actively motile organisms and gas producers at the same step. It also is a rich nutrient medium and the growth is usually a heavy one, giving abundant material for transplanting after a short period of growth. In all, material from 15 cases was examined. In 5 the cultures were taken from the lesions of the large gut at autopsy, in the others from the blood and mucus of the stools. Of the 15 cases an organism corresponding to the morphology and biology of the Bacillus dysenteriæ was isolated in varying numbers from 10. This organism splits mannite to a very minor degree as shown by the mannite-bouillon titrations (average, 0.11% acidity; maximum, 0.30%; minimum, 0.00%, as shown in accompanying chart), so that it is believed to belong to the Shiga type.

MANNITE-BOUILLON TITRATIONS.

| Case. | Control. | Mannite. | Per Cent. Acidity. |
|---|---|---|---|
| 1 | 2.30 | 2.40 | 0.10 |
| 2 | 2.32 | 2.37 | 0.05 |
| 3 | 2.10 | 2.13 | 0.03 |
| 4 | No B. dysenteriæ recovered. | | |
| 5 | 2.00 | 2.30 | 0.30 |
| 6 | No B. dysenteriæ recovered. | | |
| 7 | No B. dysenteriæ recovered. | | |
| 8 | 2.31 | 2.40 | 0.09 |
| 9 | 2.32 | 2.41 | 0.09 |
| 10 | 2.26 | 2.37 | 0.11 |
| 11 | No B. dysenteriæ recovered. | | |
| 12 | No B. dysenteriæ recovered. | | |
| 13 | 2.30 | 2.30 | 0.00 |
| 14 | 2.32 | 2.41 | 0.09 |
| 15 | 2.19 | 2.43 | 0.24 |

The results of a parallel series of agglutination tests give evidence that the organism belongs to the Shiga type (Fig. 2). These tests were made with the blood of a recovered case and are parallelled in each instance with a test in the same dilution of a stock Shiga and a stock Flexner-Harris type.

DILUTIONS.

| Organism. | 1-100. | 1-500. | 1-1000. | 1-5000 | 1-10,000. | 1-50,000. |
|---|---|---|---|---|---|---|
| Shiga. | + | + | + | − | − | − |
| No. 1. | + | + | + | + | − | − |
| Flexner-Harris. | + | + | − | − | − | − |
| Shiga. | + | + | + | + | − | − |
| No. 2. | + | + | + | + | − | − |
| Flexner-Harris. | + | − | − | − | − | − |
| Shiga. | + | + | + | − | − | − |
| No. 3. | + | + | + | + | − | − |
| Flexner-Harris. | + | + | − | − | − | − |
| Shiga. | + | + | − | − | − | − |
| No. 5. | + | + | + | − | − | − |
| Flexner-Harris. | + | − | − | − | − | − |
| Shiga. | + | + | + | + | + | − |
| No. 8. | + | + | + | + | − | − |
| Flexner-Harris. | + | + | + | − | − | − |
| Shiga. | + | + | − | − | − | − |
| No. 9. | + | + | + | − | − | − |
| Flexner-Harris. | + | − | − | − | − | − |
| Shiga. | + | + | − | − | − | − |
| No. 10. | + | + | + | − | − | − |
| Flexner-Harris. | = | − | − | = | = | = |
| Shiga. | + | + | + | − | − | − |
| No. 13. | + | + | + | + | − | − |
| Flexner-Harris. | + | + | + | − | − | − |
| Shiga. | + | + | + | − | − | − |
| No. 14. | + | + | + | + | − | − |
| Flexner-Harris. | + | + | − | − | − | − |
| Shiga. | + | + | + | + | − | − |
| No. 15.* | + | + | + | + | + | + |
| Flexner-Harris. | + | + | − | − | − | − |

FIG. 2.

A second series of agglutinations run in a dilution of 1-100, 1-1000 and 1-10000 with serum from ten other recovered cases and the two stock types gave the following reactions.

*Autogenous.

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| | 1-100. | | 1-1,000. | | 1-10,000. | |
|---|---|---|---|---|---|---|
| Case. | Shiga. | Flexner-Harris. | Shiga. | Flexner-Harris. | Shiga. | Flexner-Harris. |
| A | + | − | + | − | − | − |
| B | + | + | + | − | ? | − |
| C | ? | − | − | − | − | − |
| D | + | + | − | − | − | − |
| E | + | − | + | − | − | − |
| F | + | + | + | − | + | − |
| G | − | + | − | + | − | − |
| H | + | + | − | − | − | − |
| I | + | − | + | − | − | − |
| J | + | + | − | − | − | − |

The second point of attack was an effort to find some tangible evidence of the mode of transmission. Recent literature on epidemiology is convincing of the point that the fly is a factor to be considered in the spread of the intestinal diseases, especially in those epidemics where the incidence is gradual rather than explosive and the cases occur here and there throughout a neighborhood or in separated wards of a hospital.

A survey of the hospital with a view to determining how the flies might become contaminated with dysentery organisms from carriers or from unrecognized cases yielded so many possible sources that only one of the more prominent ones was selected as a test. In any insane hospital it is well-nigh impossible to prevent the access of flies to some fecal material. Screening methods are of value, but are also notoriously inefficient in keeping out all the flies, especially if they be present in large numbers outside, and this factor, in conjunction with the filth of many of the patients in such an institution, makes the problem an almost hopeless one from this point of attack. At the Worcester State Hospital one room of the laundry with special washing machines is given over to the laundering of bedding and clothing soiled with filth, and this room was selected as one of the most prolific sources of fly contamination with fecal material. The reports of bacillus carriers in all the intestinal infections, coupled with the almost annual occurrence of a few cases of severe dysentery, render the occurrence of infected material in almost any assortment of feces from a large number of people so readily possible that for the purpose here in view it was not deemed necessary to show that there was actually material present in this room of the laundry from either a carrier or an active case. As a matter of fact, the active cases were all isolated in well-screened wards, and all stools, bedding, etc., disinfected carefully so that the chances of material from active cases reaching the laundry were small.

To demonstrate experimentally the actual transference of living bacteria from the laundry to other parts of the hospital, recourse was had to a non-pathogenic easily recognized bacillus, and to fulfill these requirements B. prodigiosus was chosen. A culture was obtained from Dr. Arthur M. Worthington, of the Department of Bacteriology of the Harvard Medical School, and we wish here to express our thanks therefor.[1] Bouillon cultures of B. prodigiosus were exposed on a high shelf in the laundry room above mentioned, on sterile gauze pads in sterile china saucers, and renewed daily during the experiment. Sterile wire fly traps baited with sterile sugar syrup were then set in a number of wards and the scullery room off the kitchen and each day's catch taken to the laboratory and allowed access to a surface of agar in a large crystallizing dish. These fly plates were then kept at room temperature and observed at twenty-four, forty-eight and seventy-two hours for the occurrence of red colonies. Fig. 3 gives an idea of the relation of the laundry room to the kitchen and wards and indicates the place of planting and wards from which flies were taken for examination. All of the saucers after exposure for twenty-four hours were found to be heavily fly-specked, and to make a rough estimate of the number of flies which had visited the plant and were in all probability contaminated, the specks on one were counted. The count resulted in the figure 115 for one plate for a twenty-four-hour exposure. Some observation of the fly while feeding has shown that while many flies defecate while feeding, the majority do not at any one meal. Of a number watched, it was found that only about one out of six defecated during their meal, so that the 115 specks, excluding a second trip by individual flies, may be taken to very roughly mean 690 flies which visited the bait and probably become contaminated with B. prodigiosus in twenty-four hours. The plants were renewed in six days, so that in all, on the above estimate, about 4,000 flies may be assumed as carrying the organism. These figures are not given as at all accurate, but merely a deductive estimate of the number exposed.

The results were striking. The first plant made in the laundry was on Aug. 24 and on the 25th flies were taken in a sterile net from the laundry and scullery room of the kitchen. Plates from both of these catches were rapidly overgrown by a spreading organism and had to be discarded. On the 26th, however, two days after the original plant, plates from flies taken in traps in both the kitchen and in the nearest ward dining room, Lincoln 1, showed unmistakable prodigiosus colonies. From the kitchen trap 18 flies were taken, and the plates showed three positive colonies. The Lincoln 1 trap yielded 19 flies and the plates two positive colonies.

On the 27th, the third day after the first plant, plates from flies trapped in Lincoln 1 and Folsom 2 both yielded prodigiosus colonies. The Lincoln 1 plate was made from a catch of 17 flies and showed four positive colonies. Only three flies were taken from the Folsom 2 trap, but of the colonies resulting, one was a prodigiosus.

On the fourth day of the experiment the remaining two wards from which daily catches of flies were made showed the test organism. Thayer 2 represented by ten flies showed three positive colonies, while Phillip 4 gave a plate which was dotted over here and there with almost as many prodigiosus colonies as those of other kinds. This result was so out of proportion to the other findings that it was repeated on the 30th, and on the

[1] We wish also to thank Dr. B. L. Arms for some chromogens which he furnished, but which were not employed in the experiments.

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same day a trap was set for the first time in another ward, Salisbury 1. The plate from Phillip 4 on this day made by 12 flies yielded five positive colonies, which is more in accord with the other results. The Salisbury plate from 17 flies showed three colonies of prodigiosus. The very heavy growth on the plate from Phillip 4 on the 29th may have been a result of contamination of the syrup bait by one of the earlier caught flies and a consequent tracking in by later catches. This factor, of course, cannot be excluded in any of the traps, but the mere presence of B. prodigiosus in traps which were sterilized before each setting and baited with sterile syrup gives evidence of the presence of at least one fly which had visited the laundry unless by this time the spread of the organisms from the original plant with consequent growth in other places might have given new sources of supply from which organisms could be carried.

The fact remains, however, that the organism was recovered from the kitchen and from every one of the five wards in which traps were set within six days from the original plant, and while growth in the syrup bait contaminated by an early entrant or growth, in other places than the laundry, planted by flies from there and relayed by other flies to the wards, might preclude any quantitative conclusions, the qualitative results are unaffected.

The appended chart, Fig. 3, gives an idea of the relation of the various points of recovery to the original plant and serves to emphasize the tremendous bearing such bacillary fly transmission may have on any of the intestinal diseases and, in fact, in many other infective processes. The dated crosses in the laundry represent the time of planting and renewal of the original culture. The dated empty circles represent the traps set which yielded negative results. The dated circles containing crosses indicate the traps from which flies were taken which on culture showed B. prodigiosus. Approximate distances are indicated on the diagram.

The third line of attack aimed at prophylaxis against the fly's activity as a transmitter, and the subject permits of three methods of approach. First, Keep the flies away from all fecal matter; second, Keep the flies away from all foodstuffs; and third, Eliminate the fly.

The first method, that of keeping the flies away from fecal matter, is nowadays attempted in almost every institution or large community by the proper disposal of sewage, but the problem in institutions for the care of the insane is rendered so much more difficult by the filthy habits of many of the patients that such sources cannot be prevented even with the best of care and training of nurses and attendants. It may be well to emphasize here, however, the great importance of doing away with all the removable sources of such contamination and of screening all places where fecal accumulations are unavoidable so as to reduce, as far as possible, the danger by this means.

The second method, i. e., keeping the flies away from the food, is also tried almost everywhere by the usual screen and fly-paper method, but with anything but satisfactory results. The ease with which flies, when present outside in great numbers, find entrance to a screened room is remarkable, and little can be expected from this method in seasons when the crop is large. All of the ward dining rooms of the Worcester State Hospital are

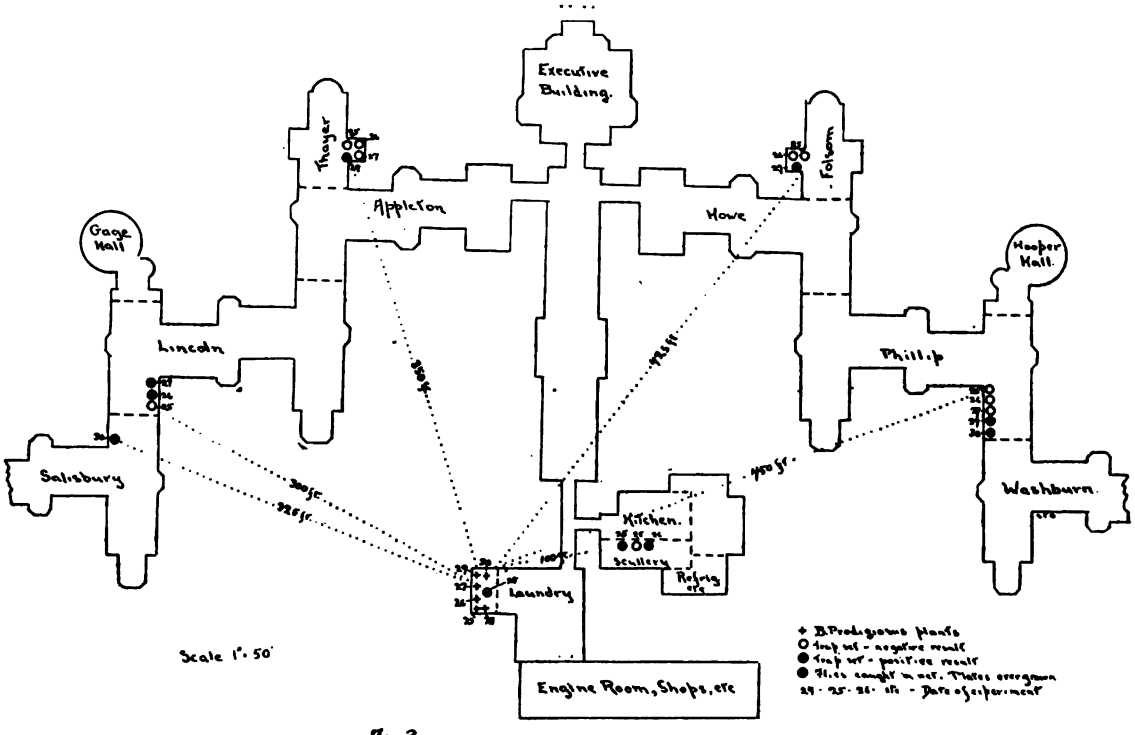


Fig 3.

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thoroughly screened and yet all of the flies used in the prodigiosus experiments here reported were caught in traps placed in the dining rooms.

The third method, eliminating the fly, promises much better, however. Dr. L. O. Howard, in the bulletins of the Bureau of Entomology, Department of Agriculture, calls especial attention to the frequence of horse manure as a breeding place of the "typhoid fly," as he has called it.

He quotes the work of Newstead, in Liverpool, and Forbes, in Illinois, as proving the breeding of flies in spent hops, ash pits, paunches of slaughtered cattle, tallow vats, miscellaneous garbage, etc., but states that commonly the eggs are laid upon horse manure.

Howard has found that in Washington the female fly lays about 120 eggs and that ten days are required for the larval and pupal stages. The egg hatches in eight hours after it is laid and the young larva molts at the end of the first day, again at the end of the second day and enters the puparium stage at the end of the fifth. Five more days are past in the chrysalis stage, and at the end of the tenth day the adult issues.

The Worcester State Hospital, like practically all such institutions, stands in the center of fairly large grounds, and the absence of any probable neighboring fly source renders the problem of elimination easy of approach. Under such conditions the fly crop can be considered as practically all home-grown, and care of the breeding places in such surroundings ought to result in a great reduction if not the ideal condition of elimination of the fly.

With these considerations in view, a survey was made of the grounds to identify the chief breeding places. This is an easy matter, as a rule, as the maggots and puparia are readily found in great numbers in places suited for their growth. That the fly produces maggots is a fact recognized by every one, but the converse, i. e., that the maggot is necessary to produce a fly, seems to have received less acknowledgment. One hears quite frequently the remark that the flies are breeding in a building, but a question as to the presence of maggots in such building is generally sufficient to point out the error.

The search was first applied to the horse-manure piles following Dr. Howard's findings. There are only two such accumulations on the hospital grounds. One, at the stable, is in a large masonry pit which is drained below and covered so that, while it is not fly-proof, it is dark and dry. An afternoon's search through this pile with a pitchfork failed to reveal a single maggot or puparium, while it did show that the manure was molding or heating rapidly. A subsequent examination of two other piles away from the hospital where the manure was kept dry and in the dark showed the same condition of rapid heating and molding and the same dearth of fly larvæ. The second horse-manure pile on the hospital grounds is at the farm barn. Here the manure is dropped through floor traps and when a pile has accumulated is taken to the part of the barn where the cow manure is collected and mixed with that. Here were found a considerable number of larvæ and puparia, but they were by no means in numbers sufficient to account for the swarms around the buildings. The larvæ were found more frequent in that part of the pile consisting of pure horse manure, while, as the other end of the barn was approached, where the proportion of cow manure was higher, the number of maggots was noticeably less until the pure cow manure was reached, where the larvæ were very few. This finding accords with Howard's statement that while the house fly will oviposit on cow manure, he has never been able to rear it in this substance, and also suggests that if horse manure be mixed with a sufficient bulk of cow manure, its efficiency as a breeding place for the house fly will be lowered at least, and possibly the breeding may be entirely prevented in this way.

Having, then, practically excluded the two horse manure piles, the search was extended. The pigpen was next examined and here was found a condition more in accord with the numbers of flies, though hardly sufficient by itself. The piles of pig manure mixed with the straw bedding, etc., were kept outside the piggery building and exposed to the air and rain and were found to be badly infested.

One ounce of this material was taken from a point a few inches below the surface where the chrysalides were thickly clustered, and from it were taken 868 puparia.

Another prolific source was found in piles of spent hops and barley malt, brewery waste, which had been hauled in for use as fertilizer. The hops show a tendency to mold rapidly and apparently do not favor the breeding of the fly as does the looser barley malt. This material proves an excellent food for the larvæ, and in those parts of the piles where there was an abundance of moisture the maggot content was astonishing. One ounce from the richest portion of one such pile yielded 1,018 maggots. The first observation of these brewery waste piles was made at a time of the summer when there had been considerable rain and the piles were damp throughout, while in places the material was well saturated. At one place where there was a layer six or eight inches deep of soggy barley over the ground the mass was simply crawling with maggots, while a visit after six days of continued dry weather showed that this layer had dried out fairly well and that the maggots had practically all disappeared, and the puparia which were found in the neighborhood were by no means numerous enough to account for all the larvæ previously seen. I take it that this means that a large proportion of moisture is required for the greatest activity, and would suggest the experiment of roofing and draining such piles to determine whether they might not thus be kept until such time as they are needed for spreading and yet rendered innocuous.

Spreading on the ground, or, better, plowing in, of all vegetable waste seems the easiest method of caring for such material, and where these methods are followed once a week, so as to allow no accumulation to stand long enough to hatch

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its quota, the nuisance ought to be well in check.

Howard has experimented with the treatment of manure piles to stop the breeding of flies, and his conclusions are that chloride of lime in the proportion of one pound to eight quarts of manure makes an effective treatment. His method is to keep the manure in a closed bin or receptacle and sprinkle each day's accession with a small shovelful of chloride of lime and to have the bin emptied every week for distribution on the gardens, etc.

In order to make a rough comparative estimate of the degree of activity of the fly in the various breeding places, one pound of material from each was taken to the laboratory and kept in screen-covered glass jars to await the hatching. Immediate counts of the larvæ and pupa would probably have given more accurate results, as the media varied in their reactions to the lack of moisture, and probably all of the figures are lower than would have been the case had the material remained undisturbed in the pile. By keeping the manure, however, for the ten-day interval, the flies hatched could be observed in order to form an estimate of the proportion of the house fly — Musca domestica — to the other species reared in the various media. In each instance the sample pound was taken to represent as nearly as possible the average content. The results were as follows.

| Source of material. | Musca domestica | Other species. |
|---|---|---|
| Stable manure pile, | 0 | 0 |
| Farm barn, horse end, | 77 | 0 |
| Farm barn, mixed, | 19 | 1 |
| Farm barn, cow end, | 1 | 3 |
| Piggery manure pile, | 361 | 5 |
| Spent hops, | 129 | 1 |
| Barley malt, | 539 | 2 |

The identification of species was carried no further than an observation of size and general appearance, and a determination of the presence or absence of flattened mouth parts.

Though these figures cannot be given as exactly representing the probable output per pound, yet they show the preponderance of the typhoid fly over other species and speak strongly for the necessity of cleaning out all such breeding places. If the house fly can transmit a culture of B. prodigiosus within six days to the screened dining rooms of as many wards, and if one ounce of vegetable waste can contain 1,018 maggots, it will certainly prove worth while to take care of the tons of such material which are apt to be found at any such institution which has not undertaken a fly extermination crusade.

*Conclusions.* An organism conforming to the Shiga type of B. dysenteriæ was recovered from 10 out of 15 cases examined.

B. prodigiosus planted in the laundry was recovered from flies caught in traps in the scullery and five screened ward dining rooms at an interval of from two to six days after the original plant.

It proves impracticable in most insane hospitals to keep the flies from access to fecal matter and from food when they are present outside in large numbers and, therefore, the best prophylaxis against fly-borne epidemics is in cleaning up the breeding places of the fly to reduce its numbers or eradicate it.

The typhoid fly — Musca domestica — breeds in tremendous numbers in decaying vegetable waste of varying sorts, and a search for maggot-infested places with subsequent attention thereto offers the best line of attack.

The house fly's egg to adult cycle is ten days, so that vegetable waste should be cared for at least once a week during fly season.

Horse manure may be treated by chemical means, but it is probable that, if it is kept dry and in the dark, but little breeding will take place. Mixing with many times its bulk of cow manure may prove effective.

When possible, all waste material should be plowed into the land without accumulating. Spreading over the land will probably suffice to reduce the pest markedly.

In hospitals surrounded by considerable ground it is probable that the great majority of the flies are home grown, and the extermination of their breeding places is an object which cannot be overlooked.

## REPORT OF A STUDY OF BROWN-SÉQUARD'S EPILEPSY IN THE GUINEA PIG.

BY A. E. TAFT, M.D.,

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IN general, epilepsies are classified as idiopathic and organic, the former to include those cases where no cause is known, and the latter those in which a definite pathogenesis is found. Post-mortem findings may reveal conditions not recognized during life. Of the cases coming to autopsy at this hospital, e. g., from April, 1909, to August, 1910, 54% show gross lesions associated with the nervous system. Since epilepsy in the guinea pig is organic in type, and the course and severity of the disease may be controlled as it cannot be in the human subject, the study upon which this report is based was taken up and carried on in detail.

First in 1850,[1] and in subsequent papers,[2,3,4] Brown-Séquard published his observations on a condition which he had found following various injuries to the spinal cord or to the sciatic nerve of the guinea pig. This was a tendency to convulsions which he considered analogous to epilepsy in man. The convulsions might occur spontaneously, but more often could be induced only by irritation of the skin over a definite area on the face, neck and shoulder, corresponding to the side on which the cord or nerve was injured. Trophic changes and anesthesia of the "epileptogenous zone," increase in nasal secretion on the affected side, and occasionally corneal affections, were reported as accompaniments of the convulsive condition.

A further observation, and one which has been extensively cited as demonstrating the transmission of acquired characteristics in mammals, was the observation that the young of epileptic

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animals might themselves become epileptic sometime after birth. But the fact has not been generally emphasized, that the so-called hereditary cases never occurred apart from other abnormality.

Brown-Séquard himself says:[5] "This inherited epilepsy I have never observed in other animals than those which had also inherited absence of toes." In the work of Charrin[6] and Prévost,[7] both found that simple amputation of a part of an extremity resulted in the development of the epileptic attack. There seems here to be a possibility that the deformity in the offspring in Brown-Séquard's cases was due to pre-natal or very early post-natal injury, bringing about a condition which would produce the same result as simple amputation of part of an extremity. The work of Brown-Séquard has since been repeated, in part at least, by a number of investigators,[8,9,10,11] some of whom have been able to confirm many, but not all, of his findings, and this question of transmission has been one of variance.

The work of this report was undertaken to observe more particularly the transmission from parent to offspring of the "epileptic" and associated conditions. It has been continued during a period of eighteen months, and is based on observations made on 195 animals. Of this number, 68 were subjected to a lesion of the sciatic nerve. The remainder were the normal animals used, and the succeeding generations. They were mainly the common smooth-haired variety, though a few rough-haired angoras were included. A large, light, well-ventilated basement room was used for their quarters, and cages of one-half inch mesh wire screen 13 by 18 by 18 in. were made for this special purpose. The frame of the cage was of zinc, and a zinc tray was made to slip in and out of the bottom of the cage in drawer-fashion to aid in cleanliness. The front was hinged to form a door, and half of the top could be lifted to admit food if desired. Sawdust was used in the bottom of the cages, and these were given weekly thorough cleanings, the tray being washed out with Sulpho-napthol and abundant hot water. The principal food was hay, or green grass in summer, oats, and carrots or beets. With four or six animals in a cage, quite a large number may be kept clean and comfortable in a relatively small space and can be conveniently arranged.

In carrying out the work, the following points have been particularly considered:

I. The requisite injury of the nervous system.
II. The development of the scratch reflex.
III. The development of the convulsion.
IV. Age relation to time of development of the convulsive tendency.
V. The zone of irritation.
  *a.* Extent of the area.
  *b.* Changes occurring in the area.
VI. The convulsion.
  *a.* Detail of the attack.
  *b.* Frequency.
  *c.* Severity.
  *d.* Duration of convulsability.
VII. The effect of convulsion
  *a.* On nutrition.
  *b.* On reproduction.
  *c.* On length of life.
VIII. Study of offspring
  *a.* Of normal female and epileptic male.
  *b.* Of normal male and epileptic female.
  *c.* Of both epileptic parents.
  *d.* Of second generation.
IX. Summary.

### I. THE REQUISITE INJURY.

It has been well demonstrated by Brown-Séquard[1,2,3,4,5] and others,[8,9,10,11] that various injuries of the cord or larger nerves result in the possibility of exciting convulsions by stimulating certain well-defined areas of the skin. Resection of the sciatic nerve was chosen in this case as it causes less disability in the animal and produces almost unvarying results. Both nerves were divided in 55 of the cases, and only one in the remaining 13.

The neurotomy was in every instance done under full ether anesthesia, the entire operation requiring hardly more than five minutes after anesthesia was established.

The technic was as follows:[12] An incision about 1 cm. in length was made just behind the great trochanter and carried through skin and muscle. The sides of the incision being drawn apart, the nerve is seen as a glistening white band which can be elevated and divided. Resection rather than simple division was done to prevent reunion of the approximated ends. A single stitch suffices to close the wound, which heals immediately. It can be scarcely detected on the second day.

### II. THE SCRATCH REFLEX.

After a period varying from five to thirty-three days, the average being eighteen days, following the division of the nerve, there develops, on irritation of the specific zone, a rhythmical scratching movement with the hind leg of the corresponding side.[14] This appears to correspond quite definitely with the scratch reflex in the spinal dog described by Sherrington.[15]

"In the dog, when the spinal cord has been transected in the neck, the scratch or scalptor reflex becomes in a few months prominent. A stimulus applied to any point within a large saddle-shaped field of skin excites a scratching movement of the hind leg. The movement is rhythmic alternate flexion and extension at hip, knee and ankle. Each flexion recurs at a frequency of about four times per second. The stimuli provocative of it are mechanical, such as tickling the skin or pulling lightly on a hair. The receptive nerve endings which generate the reflex lie in the surface layer of the skin about the roots of the hairs."

The body is bent with the convexity away from the affected side and the scratching foot approximates the point irritated. The foot movement continues only during the time of irritation. This phase probably represents what has been termed by some the incomplete convulsion, but differs quite definitely from the complete attack of which it always forms a part.

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III. THE DEVELOPMENT OF THE CONVULSION.

In this series, the complete convulsion developed in periods varying between ten days and three months and seventeen days, the average being one month and nine days after the division of the nerve and averaging eighteen days after the appearance of the scratch reflex. In the beginning the attack is usually very brief. On irritation the scratch-reflex first appears and the animal falls on the side with the eyes closed, only for an instant, almost immediately gaining its feet and appearing quite normal. Of the 68 animals operated upon, only 2 failed to develop the complete convulsion. These were black and tan angoras, a female and an offspring. Division of the nerve was first done on the older animal on Sept. 17, with no result. Consequently the operation was repeated and was done also on the younger, on Jan. 4. The older showed the typical trophic changes, with development of the scratch reflex on Jan. 28, the younger not showing the reflex until March 1, and neither has had a complete convulsion during the period of six months subsequent to operation. Thus 97% developed the complete convulsive attack, 3% demonstrating only the scratch-reflex.

Nowhere in the literature have we been able to find any exact statistics of the results obtained by Brown-Séquard. He says that of 67 guinea pigs in which the sciatic nerve had been cut, all except a few developed the "complete attack." Bramwell and Graham-Brown,[16] in their series on 41 animals, report that one quarter showed fully developed convulsions, two thirds the scratch reflex and one third negative. Of 100 animals operated upon by Obersteiner, almost all — which is quite indefinite — developed the complete attack.

Gutnikow, in Obersteiner's laboratory, operated on 40 animals, only 6 of which developed convulsions.

Karplus, some years later, also working under Obersteiner, among 30 animals operated upon, obtained no complete results and was obliged to give up further observations. Evidence is sufficient, however, to show that, in general, division of the sciatic nerve will result in convulsions.

IV. AGE RELATION TO DEVELOPMENT OF CONVULSION.

It has been claimed that age, judging by the body weight of the animal, determines the time of development of the convulsive tendency, and also the severity of the attack. In the series of 58 animals observed by Bramwell and Graham-Brown,[16] in which only 10 developed the complete attack and 8 of these weighed over 650 gm., "they drew the conclusion that the age of the animal at the time of the operation, as approximately judged by its weight, appeared to be a factor of importance in determining the subsequent development of the complete Brown-Séquard fit." This is probably true in a degree. That is to say, large, well-nourished animals over eight months of age do react more quickly and definitely than those in the first few months of life. Among the latter, however, a difference of a month or two seems not to be significant. Of 4 animals in this series operated at the same time, 2 were over four months of age, one was two months, and one only one month old. The youngest developed convulsions a week before any of the others and only thirty-three days after the operation. This would go to show that age is not necessarily a determinant in the development of convulsions.

V. THE ZONE OF IRRITATION.

*a. Extent of the Area.*

The convulsions following injury to the sciatic nerve were in no case spontaneous, but were produced by mechanical irritation of the so-called "epileptogenous" zone. This is an area of the skin covering the side of the face, neck and extending slightly beyond the posterior limit of the scapula. Light molding of the skin between the thumb and forefinger is quite sufficient to induce a reaction. More extensive manipulations or sharp pinching are not effective. In the most sensitive animals, touching the hair on the back of the neck, or holding the animal by the shoulders, will produce a convulsion. In this way, the attacks may appear spontaneous; when several animals are in a cage together, simply being brushed against serves to cause an attack.

In most cases, close observation shows the first area to become sensitive is the skin over the lower jaw and sometimes just beneath the eye on the affected side. There is apparent anesthesia at this point, and this extends progressively over the neck and shoulders, until nearly the anterior half of the body, on the side of the divided nerve, becomes sensitive.

*b. Changes Occurring in the Area.*

Concurrent with the beginning anesthesia and the development of the scratch reflex, there appears a trophic change in the zone of irritation. Parasites accumulate upon it; the hair becomes dry and breaks off or falls out, leaving the skin quite bare, or it may be there is only a thinning of the hair, while the outer limit of the zone is marked by a narrow band about 0.5 cm. in width where the hair is entirely fallen out. In some instances, this stripe of skin may ulcerate and slough away, followed by formation of dense scar tissue. Graham-Brown noticed that this zone became more sensitive after cessation of convulsions than the corresponding area on the opposite unaffected side. As the operation on this series of animals was bilateral in most cases, observations on this point could be made only on very few, but in these the hyperesthesia was quite apparent.

VI. THE CONVULSION.

The first step in the production of a convulsion is the irritation of the "epileptogenous" area. This excites the scratch reflex, which always precedes the complete convulsion. In this phase, the body is curved toward the irritated side, the hind foot approximates the point irritated with a rhythmical scratching movement and the muscles

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in the back of the neck are contracted, raising the nose above the plane of the body. After from six to ten strokes of the foot the animal falls on its back with the eyes closed and all muscles in a state of tonic contraction, the thorax is fixed and the legs flexed. Following this there is clonic spasm of the extremities, especially noticeable in the forelegs and feet; the head is drawn from side to side; the lower jaw is rapidly lowered and raised with a sharp biting action and the abdominal muscles contract and relax, causing alternate flexion and extension of the body. Recovery from a single convulsion is almost immediate and the animal gains its feet. There is often some transient spasm of groups of muscles about the back of the neck and shoulders, or rubbing the nose with the forefeet. In prolonged attacks, periods of dullness followed. In very susceptible cases, the tonic phase may begin almost immediately on irritation, and here the animal does not fall on its back, but the convulsion takes place while in a crouching position. The single attack is usually quite brief, lasting from fifteen to thirty seconds, sometimes less. It may, however, be repeated successively many times, simulating a typical status epilepticus. One case observed passed from one severe convulsion into another, with scarcely any interval, the entire series lasting over three minutes. The question has arisen whether the complete attack is accompanied by a real loss of sensibility or consciousness as reported by Brown-Séquard. This, of course, is most difficult to determine, but it can be asserted that the animal is incapable of voluntary movements and does not respond to any of the ordinary external stimuli involving the touch or pain sense, or that of hearing.

*a. Frequency.*

In nearly all the animals of this series, convulsions could be elicited at any time and repeatedly, the zone of irritation rarely losing its power to bring out the reflex for at least five or six successive attempts. There were a few among the less susceptible, however, that would react only once, and then a considerable period had to be allowed to elapse before irritation would produce a complete convulsion.

*b. Severity.*

The severity of the attack varies widely with the individual animals. In general it is true that those which develop the convulsions most quickly show the most pronounced reaction. Mature and well-nourished animals have been ordinarily observed to be subject to the most severe attacks, which proved to be the case in this series.

*c. Duration of Convulsability.*

The period during which convulsions may be excited is a variable one. Brown-Séquard found them more difficult to induce after the fourth month. The average in these animals was somewhat longer. During six months, daily attacks could be produced in the greater number, and some animals were still sensitive a year after the first complete convulsions. It is to be seen that those cases in which daily or frequent stimulation has been given over a considerable period remain "epileptic" longer than those which have been excited to fewer convulsions. The state of nutrition of the animal also seems to be a contributing factor, as many that have lost in weight following the development of the convulsive tendency have also ceased to respond to irritation. Isolation and special feeding to restore good physical condition has, in most cases, brought about a return of convulsability. There appears here a similarity to the human subject, in whom restricted diet lessens the frequency of the epileptic attacks. Another very evident factor in determining the production of convulsions in the guinea pig has been the birth of young. Following this there was frequently a complete cessation, which, however, was not always permanent. This may also have a relation to the state of nutrition.

VII. THE EFFECT OF CONVULSIONS.

*a. On Nutrition.*

Convulsions often repeated over a considerable period of time bring about a marked general malnutrition, regardless of the abundance or quality of food given. This condition, in turn, acts to inhibit convulsability, which returns, however, on improvement of the general physical condition of the animal and is in no way influenced by the intermission.

*b. On Reproductivity.*

One of the most marked results of frequent convulsions is the lessened reproduction. This was also noted by Sommer [10] in his observation. These animals, ordinarily so prolific, produced so few young that, for a time, it seemed as though work with later generations would be impossible. Matters were complicated by the fact that the few young born were not alive at birth and the mother died in a day or two, showing marked emaciation. In the cases examined, cultures from the heart's blood showed a staphylococcus septicemia. This came to be so serious a matter that the convulsions were omitted, with very evidently good results. The young were born alive and strong and the adult animals lived to rear their offspring. This seemed to indicate that death following the birth of young, as well as that of the young themselves, was not due directly to the injury to the nerve, but rather occurred as a result of frequent convulsions. This was tried out further in fresh animals. The unilateral operation was done on ten young females, all of which became epileptic in course of time. These were stimulated to convulsions until the complete, severe, typical attack was assured. Following this, only very infrequent convulsions were brought on, with the result that the animals remained in far better physical condition, although there was a slight falling off, and those which bore young showed no abnormality. Here we have phenomena pointing to disturbed metabolism varying in gravity with the frequency and severity of the convulsions.

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VIII. STUDY OF OFFSPRING.

The observation of the young as well as that of the adults proved a time-consuming study, as it was desired to find if any showed either induced or spontaneous convulsions. Four types were considered successively.

I. Offspring of epileptic male and normal female.
II. Offspring of normal male and epileptic female.
III. Offspring of both epileptic male and epileptic female.
IV. Offspring of animals of the second generation.

Brown-Séquard[5] reported having seen in the young of epileptic guinea pigs the development of epilepsy some time after birth, but, as already noted, this occurred only in those having a defect of the hind limbs. He could recall definitely only 13 cases of all the offspring observed in which this condition existed. He says, "Most likely what is transmitted is the morbid state of the nervous system."

Of 32 young observed by Obersteiner, 2 were judged "epileptic," but no note has been seen that there was any deformity accompanying the epileptic condition.

Westphal reports two offspring of an epileptic animal both of which on irritation of the epileptogenous zone had only an atypical attack, which, however, he considers as characteristic. This would seem to be hardly confirmatory, as many animals, both adults and young, whether offspring of epileptic or perfectly normal parents, often show spasmodic muscular contractions and body movements on irritation of the specific zone, such as twitching of the extremities and moving the body from side to side. This is, however, quite different from the typical convulsion with its tonic and clonic phases and loss of sensibility. Sommer[10] gives absolutely negative results with 23 offspring. Grainger-Stewart,[17] in observations covering considerable time, has never had a case of epilepsy in offspring of epileptic animals.

I. *Offspring of Epileptic Male and Normal Female.*

In this class 52 young were under observation, and in no case was there an animal presenting any abnormality, and there were only 4 deaths, making the mortality only 7%.

II. *Offspring of Normal Male and Epileptic Female.*

Of the 26 offspring in this class, only 15 were alive at birth and one died on the second day, leaving only 14 for study. Thus, there were 46% of deaths among the young of the epileptic female.

III. *Offspring of Epileptic Male and Epileptic Female.*

Of the entire 73 young in this division, 18 were dead at birth and 3 extremely weak ones died on the second or third day. These showed no paralysis. If stimulated by stroking the head or sides while lying on the back, there was free movement of all the limbs, but not sufficient strength to walk or eat. The mortality here was 29%. Comparing this with the above, it would appear that fewer offspring of the epileptic female survived than in the case of both epileptic parents. This is due to the fact that the injury was bilateral, and frequent convulsions were produced in all cases in Class II, while in the later cases, in Class III, the attacks were restricted and very few were produced, not more than one weekly, after being fully established. The change is clearly indicated by the fact that previous to the limitation of convulsions there were 54% of deaths, while following the restriction there was a mortality rate of only 21%. Aside from this there was no abnormality. No transmission of convulsions was found.

IV. *Offspring of Animals of the Second and Third Generation.*

Since no direct transmission occurred, the work was further carried on to find if alternate heredity according to the Mendelian principle would result here. Ten young of the third generation and 3 of the fourth failed to present anything notable.

IX. SUMMARY.

I. Lesions occurring in the cord or principal nerve trunks of guinea pigs produce a tendency to convulsions resembling epilepsy in the human subject. The attacks, however, have not been proven spontaneous, but may be elicited by irritation of a specific zone of skin on the side of the face and neck corresponding to the injured nerve. In this series 97% of the animals in which the sciatic nerve was resected developed convulsions; the remainder, 3%, showed only the scratch reflex.

II. The scratch reflex, the first manifestation of the nervous lesion, developed at the end of a period averaging eighteen days after the division of the nerve.

III. The complete convulsion appeared on an average of one month and nine days following the injury to the nerve and eighteen days after the development of the scratch reflex.

IV. Age proved not to be an absolute factor in relation to the time of development of the convulsions. Among 4 animals operated upon at the same time, varying from over eight months to one month of age, the youngest animal developed the convulsions first, only thirty-three days following injury. The age is ordinarily judged by weight. The average weight of a guinea pig at one month is slightly less than 250 gm.

V. The zone of irritation varies in extent. The sensitive area is at first limited to the skin over the side of the face. This extends progressively with the further development of the convulsive tendency to include the shoulder and often some distance beyond the border of the scapula. The degree of sensitiveness varies in individual cases. Sometimes merely touching the hair will produce an attack, while in others definite molding of the skin is required.

Trophic changes occur in the zone of irritation, manifested often by falling of the hair, leaving the skin exposed; or it may be the hair becomes brittle and breaks off, thus causing a roughening of the coat. In extreme cases the skin may ulcer-

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ate. As a rule parasites accumulate over the area and there is some anesthesia.

VI. The convulsion follows irritation of the sensitive zone and is preceded by the scratch reflex. Following this, the animal falls on its back with eyes closed, insensible, and all its muscles in a state of tonic, followed by clonic, convulsion. The attack is usually brief, but may be spontaneously repeated several times. For some time following the return of consciousness the animal is somewhat stupid and dazed.

It was found that the animals would in most cases respond to repeated irritation, though some could be made to react only once without an interval of some hours to a day or more.

Severity of attacks depended on the size and physical condition mainly, though no rule could be applied to all cases. Those developing the attack most quickly were subject to the most severe convulsions.

VII. The effect of convulsions was productive of a marked loss of flesh, and this bore no relation to the quantity or quality of food given.

Lessened reproduction was also universal, and in almost every instance of birth of young they were not alive or died immediately after birth. This was proved not to be due directly to the division of the nerve, for by limiting attacks to not more than one each week, perfectly normal offspring were born. This would seem to show a marked disturbance in metabolism due to frequent convulsions.

VIII. The study of 128 offspring of epileptic animals to observe the transmission of epilepsy, reported by Brown-Séquard [5] to have been seen in his series, was absolutely negative. Four young were very weak at birth and died on the second day, but showed no other symptoms. The fact that *convulsions in the offspring of epileptic animals always, in Brown-Séquard's experience, existed with a lack of toes,** makes it seem possible that there may have been some pre-natal injury which would produce the same effect as a division of the nerve.

The 13 young of the second and third generations were also negative.

A microscopical study of the trunk organs from these animals should be of interest to compare with that of a series from the human subject.[18]

The nervous system of animals having had frequent convulsions, if examined histologically, might reveal something singificant, and the skin lesion existing in the zone of irritation has never received more than gross consideration. These lines, if followed out, would add much to the complete study of Brown-Séquard's epilepsy in guinea pig.

THE LITERATURE.

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## Clinical Department.

### AN EXTRA-UTERINE PREGNANCY AT FULL TERM.*

BY C. H. HARE, M.D., BOSTON, MASS.

It was the writer's great pleasure to assist Dr. Swift in his operation upon a case of full-term extra-uterine pregnancy which he reported to this Society on Jan. 18, 1898, and which report was later printed in the Boston Medical and Surgical Journal, May 12, 1898. That case was operated forty-five days after the supposed death of the child. The placenta was removed. Most of the membranes not removed. The abdomen was closed without drainage. There was considerable shock, but otherwise the convalescence was excellent. The following summer a second case was seen in Paris. Pinard made the diagnosis of extra-uterine pregnancy at about five and one-half months. The patient was taken into the hospital and watched until a living child was removed from the abdomen by Ségond a short time before labor would have been expected had the pregnancy been intra-uterine. The placenta and membranes were not removed. The membranes were stitched to the abdominal incision and the sac drained. The writer first saw this case between seven and eight weeks after the operation, at which time both mother and baby were in the best of health. The abdominal sinus was then about the size of a child's little finger. My third case to see was operated by myself.

Mrs. C. C., 1451, was first seen March 30, 1910. Aged thirty-three years. Married ten years. One child, nine years of age. No abortions. Menstruation began at sixteen and had always been regular and normal. She has never had any pelvic trouble. The last and regular menstruation occurred May 6, 1909. There was no more flow until March 20 to 22, 1910, when she used some dozen napkins and passed a few clots after an ether examination. She had severe lower abdominal cramps on June 6, after which she was in bed for about six weeks with much nausea and vomiting and a large loss in weight. She was then fairly well

* Read at meeting of the Obstetrical Society of Boston, Oct. 25, 1910.

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until cramps began about Christmas time and troubled her at times until Feb. 12. She felt life daily from October until Feb. 12, but never after that date. The abdomen steadily increased in size from October to February, and the leg and thigh veins became prominent. She had no question of her pregnancy and expected her confinement Feb. 10. On Feb. 12 from 9 A.M. to 4 P.M. she had mild labor-like pains which she hourly waited to have severe enough to send for her physician. Instead of which, however, they ceased. In the next few days the breasts became swollen and leaked. The abdomen and the large veins gradually lessened in size. When seen March 30 she weighed one hundred and thirty pounds, having lost ten pounds in six weeks. Her mental and nervous condition forbade a satisfactory examination. The cervix had practically disappeared, but there was a pencil-size hole high up and near the pubes on the left. A soft solid mass filled the pelvis and abdomen up to the navel. The ether examination had been made by two men of exceptionally large obstetrical experience, who found the uterus empty and the uterine canal three and three-fourths inches deep. They thought it most likely that she had a rapidly growing fibroid and that the pregnancy idea had been an error. My knowledge of the literature acquired through the case of Dr. Swift was fresh in memory, owing to the rarity of his case; hence, with the typical signs of a pregnancy over a period of nine months ending with a pseudo-labor and then the disappearance of pregnancy signs as the literature tells us to be typical of such cases, my first guess for diagnosis was an abdominal pregnancy at full term with death of the child on Feb. 12. She was operated April 6. A few ounces of dark serum were visible on opening the peritoneum. The fetal sac was ruptured and a dead baby weighing four and three-fourths pounds removed. The head was in the left pelvis. The placenta was fist size and shape in the right pelvis, easily removed, harder and stiffer than normal and weighed two pounds. The child and inside of the sac were very thickly covered with vernix caseosa and fine hairs. The uterus was soft, double normal size and lying in front of the sac. The sac was about the thickness of intestinal wall, but firmer and, barring the abdominal wall to which it had no adhesions, it was as if so firmly pressed into everything it touched that it was a part of and inseparable from everything touched. Only a small upper portion was removed. From the pelvic portion an opening was made into the vagina; a T-tube placed for drainage; and the cut edges of the sac infolded and sewed tight. Tubes, ovaries and appendix were not seen. There was no hemorrhage. More blood was lost from the vaginal puncture for the drainage tube than from any other source. The baby and placenta were given to Dr. Leary, who tells me they are simply like the usual dead and macerated specimens and nothing remarkable about them. The operation was well borne. The highest temperature was 101° and pulse 110 on the second day, after which it was never above 99° or pulse above 95. There was profuse discharge from the tube, with much odor, for several weeks. She left the hospital four weeks from the day of operation, but the drainage tube was not removed until twelve days later. Her convalescence was ideally good. The writer has seen her only once since operating, but by letter four days ago she tells me that she is completely tired out and in poor general condition owing to the care of an invalid mother since her return from the hospital, yet her menstruation is the same as before the operation and she has no pelvic pain or discomfort of any kind.

Diagnosis, care and operation on these cases is, of course, most vital. No man's personal experience, owing to the rarity of cases, can be sufficient to make him an expert, and as time goes on it is probable fewer cases of ectopic gestation will escape early diagnosis and early operation; hence any one individual's experience is likely to lessen. We are indebted to Sittner for exhaustive work upon extra-uterine pregnancy at term in papers published in 1901 and 1908. This writer collected reports of 165 cases of viable fetus at the time of operation from the year 1813 to 1906. Of these he could follow 122 sufficiently long to tell us that 63 lived beyond the first month, 23 beyond the first year, 6 beyond the sixth year, and one to the age of nineteen. His statistics on deformities report, of 93 children, 10 as badly deformed and 5 so badly as to cause death. A paper by Peterson, of Ann Arbor, in December last, reviews the papers of Sittner and a few others since published, and ends with the following conclusions.

*First*, wherever conditions permit, operation for the removal of the gestation sac is indicated in the first half of an extra-uterine pregnancy, since,

*Second*, at this period the mother is in great danger from rupture and sepsis; and,

*Third*, the chances for the survival of the fetus are very poor.

*Fourth*. During the latter part of an extra-uterine gestation the chances of rupture and a fatal hemorrhage are very much less (4.8%); and

*Fifth*, the chances of the survival of the fetus are very much greater.

*Sixth*. While malnutrition and malformation of the extra-uterine child are more common than with the fetus under normal conditions, they are not frequent enough to contra-indicate attempts at saving its life.

*Seventh*. Hence, under favorable surroundings, when the patient can be watched, she should be allowed to go within two or three weeks of term before operation.

*Eighth*. Since the maternal mortality is more than twice as great after operations in advanced extra-uterine pregnancy where the placenta is left behind,

*Ninth*, its removal should be one of the cardinal principles of each operation.

*Tenth*. In the "discoid" variety of placenta where only a small surface of this organ is not attached, the blood supply must be controlled, either by tying the vessels or by compression of the aorta before an attempt be made to remove the placenta.

*Eleventh*. When for any reason removal of the placenta is impossible, the sac should be stitched to the parietal peritoneum and the placenta shut off from the peritoneal cavity by gauze.

*Twelfth*. Dependent drainage through the vagina should be secured whenever possible.

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THE profession in Russia celebrated, in various ways, Nov. 26, the hundredth anniversary of the birth of Nicolai Pirogoff, the great Russian surgeon, chief of the military medical service during the Crimean and the Russo-Turkish wars, and long professor of surgery at the Military Academy. His first work, published in 1836, on the anatomy of arteries and fascia, not only gave him an international reputation, but blazed the way for the surgery of the future. — *Jour. Am. Med. Asso.*

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# Medical Progress.

## PROGRESS IN SURGERY.

### Thoracic Surgery.

BY SAMUEL ROBINSON, M.D.

At the Chicago meeting of the American Medical Association in 1908 a symposium on thoracic surgery was held and later reviewed in the columns of this Journal. [1]

Considerable interest prevailed in the discussions concerning the comparative value of the positive and negative pressure methods of avoiding the ill-effects of operative pneumothorax, and although clinical experience with the use of apparatus was then too small to be of value it was evident that the use of differential pressure might open a new era in thoracic surgery. Such hopes have been realized in a striking activity of experimental and clinical investigation which promises a lowered mortality from thoracic disease. The progress may be reviewed from the experimental and clinical aspects.

#### EXPERIMENTAL INVESTIGATION.

1. *Apparatus.* The old controversy between the advocates of plus and minus pressure is rapidly closing. The blood-pressure experiments of Seidel, Dreyer and Robinson have shown that positive differential pressure when properly administered does not disturb the physiology of respiration and circulation. The operations of Kuettner under negative and positive pressure have demonstrated the like practical applicability of the two. Innumerable operations upon animals and human beings under positive pressure have been sufficiently successful to warrant its continued use. The simpler and less expensive method then has naturally become the popular one and no fewer than fifty devices for the application of positive pressure have now been presented.

Conceiving the interesting idea that negative pressure may be better adapted to certain pathological conditions within the thorax, Willy Meyer has constructed a double cabinet for the combined use of plus and minus pressure with mechanism for prompt transition from one to the other.

Positive pressure cabinets large enough to contain the anesthetizer and the patient's head have been designed by Engelken, Meyer and Robinson, and are in use in Breslau, New York and Boston.

The head helmet with openings for the patient's head and the anesthetizer's hands continues to be the choice of Brauer and Janeway, and Karewski contributes another such apparatus with slight modifications. Mayer, Tiegel, Schmieden, Widal and Robinson remain satisfied that the purposes of differential pressure can be accomplished with the face mask method. Mollgaard and Flint have since constructed apparatus applicable to the mask method, with ingenious improvements in the control of the etherizing and exhaust segments.

Matas, Kuhn, Green, Dorrance, Fell, Richter and others have continued to advocate the use of peroral intubation, although it may be said that their methods more nearly approach the older custom of rhythmical artificial respiration than the principles of differential pressure, which presupposes the use of a constant, uninterrupted stream of air.

While the interest of investigators in the Sauerbruch differential pressure idea was at its height, Volhard and Sollmann were demonstrating that, in the presence of a wide open pneumothorax on both sides, oxygenation of the blood can be maintained without inflation of the lungs provided a constant stream of oxygen is introduced in the region of the bifurcation of the trachea. This, of course, involved either the introduction of a tube through a tracheotomy wound, or through the mouth, larynx and trachea. Robinson, in 1908, published the results of animal experiments in which he had verified the investigations of Volhard and Sollmann, and further added that while oxygenation could be maintained with intratracheal oxygen in the presence of almost complete lung collapse, it could not be maintained with air alone without at least a two-thirds inflation of the lung, even when the air supply was provided at the bifurcation of the trachea. Meltzer and Auer have explained these phenomena from a physiological standpoint and have perfected the method of introducing air through a tube to the bronchial bifurcation, calling the method "intratracheal insufflation." They have satisfactorily demonstrated that in a curarized animal, with the front of the chest removed, oxygenation is preserved with the lungs quiescent in a state of normal inflation. Inasmuch as the introduction of a tube in the dog is a comparatively simple procedure, many investigators have come to employ this method in their experimental intrathoracic operations. Elsberg has constructed an apparatus applicable to the human, and it is supposed by some that this intratracheal insufflation will eventually supplant the other methods.

Simplicity, portability, inexpensiveness, are features which recommend the insufflation method to its supporters. The advocates of the cabinet, mask and helmet methods argue that in thoracic operations on the human the avoidance of all intrabuccal and intratracheal instrumentation is of value, not only because of the difficulties attending intubation in certain individuals, but also because of the frequent intolerance of the pharynx and trachea to foreign bodies in spite of deep local and general anesthesia. It is doubted whether the introduction of a tube to the bifurcation of the trachea even in the most suitable patient is simple enough to warrant its practice after the opening of the thorax and the onset of symptoms which indicate the need of differential pressure. If we assume that at such a crisis an attempt at intubation might threaten the life of the patient, it would seem to be necessary to introduce a tracheal tube in all patients under-

[1] Progress in Surgery, James G. Mumford: Boston Med. and Surg. Jour., vol. clix, Nos. 23 and 24, pp. 760–763; 796–798.

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going thoracic operations. Those who employ the other forms of apparatus, recognizing their ease of immediate application in case of need, and knowing, furthermore, that in a large percentage of thoracic operations no pressure is necessary, have come to operate with apparatus at hand, but without its application until necessary. Operators have remarked upon the consolation obtained from the immediate availability of means of differential pressure, although in the course of a doubtful operation it may not have been found essential. It has been argued further that all thoracic operations which may need artificial inflation are of a nature which demand hospital treatment, and that ease of portability beyond that of moving apparatus from one hospital to another is not a feature in support of the use of intratracheal insufflation unless the latter method can be shown to have more practical advantages. It has been mentioned, too, that thoracic operations of the type referred to are ordinarily of sufficient shock to the patient without the addition of intratracheal instrumentation. Again it is argued that in a large majority of thoracic operations but one cavity is opened, and that inasmuch as the remaining lung in the majority of cases continues to functionate enough to prevent a too great accumulation of carbon dioxide in the space between the lips and the bronchial bifurcation, the introduction of air as deep as the bifurcation is not essential, and that moderate pressure applied at the nose and mouth is sufficient to accomplish the desired result. Tiegel, recognizing the contribution of Volhard, has by the mask method substituted oxygen for air in his mask differential apparatus and becomes satisfied in a series of operations on the human that oxygen at a pressure of 1 cm. of water, although not enough to inflate the lung, is sufficient to maintain oxygenation. In cases of double pneumothorax, oxygen under greater pressure with resulting inflation may be necessary. He even recognizes that in many cases there is sufficient functional activity of the unoperated lung to inhale enough oxygen from the mask without resistance to its escape to preserve the normal heart action; he nevertheless advocates the use of pressure in conjunction with oxygen because of its necessity in double pneumothorax, in tracheal obstruction, in case of need of artificial respiration and for inflation of the lung before closure of the thoracotomy wound.

2. *Experimental thoracic operations.* Excision of greater or less portions of the lung tissue has continued to be a popular problem of experimental investigation. It is now universally admitted that excision of one or two lobes of the lung in dogs or rabbits is attended with absolute success, the manner of treating the lobe stump being of comparatively little importance and attended with like success with mass ligatures or with special treatment of the bronchial stump. (Tiegel, Green, Robinson, Danielsen.)

Total extirpation of one lung in animals has now come to be regarded as a procedure with low mortality. Sauerbruch and Robinson, who had performed total pneumectomies under negative and positive pressure respectively, had met with opposite results. They conclude that the explanation of success with negative pressure rests in the fact that at the close of an operation in a negative pressure cabinet the persisting pressure in the emptied side of the thorax is equal to that of the unopened side and that the conditions are favorable, therefore, for the compensatory hypertrophy of the remaining lung and for the displacement of the heart and lung to occupy the hollow pleural cavity. In a long series of animal operations under positive pressure, in which no effort was made at the end of the operation to reexpand the remaining lung or otherwise to obliterate the atmospheric pressure of the open side, the mortality was high. They, therefore, recommended the necessity of hyperinflation of the remaining lung at the close of operations for total pneumectomy in dogs. Flint has since proved the importance of this suggestion. After pneumectomy he sutures the thoracotomy wound, leaving a bent glass tube, which, under hyperinflation of the remaining lung, is suddenly removed as the last mattress suture is tied. He has also produced an absolute negative pressure within the empty thorax by post-operatively aspirating the hollow thorax until by manometer reading the normal negative pressure was produced. By these two methods he has performed seven total pneumectomies with two deaths. Von Eberts has likewise been successful with the aspiration method. It is of interest that in Flint's operations the inversion of the bronchus with peribronchial stitch, recommended and successfully employed by Meyer, was not considered essential, and it is further noticeable that the successful total pneumectomies under negative pressure performed by Sauerbruch were done with mass ligatures of the stump and vessels. From these factors it may be concluded that bronchial leakage is less likely to occur if the normal negative pressure is preserved after pneumectomy, and that the previous fatalities have been due more perhaps to neglect of this feature than to lack of care in the closure of the bronchus. The most successful series of total pneumectomies in dogs is that of Willy Meyer, with seventeen successes in twenty-one operations. The fact that negative pressure was employed in most of these operations, together with particular care in closure of the bronchus, leaves us undetermined as to which was more responsible for his results.

The technic of closing wounds in the lung has been presented in several forms by Talke, Green, Mayer, Dorrance, Tiegel and others, and the like success of the varying methods has led us to conclude that suturing of cuts, lacerations, and other wounds of the lung tissue is a simple and successful procedure. Dorrance reports a series of eighteen experiments in which stab wounds were inflicted, stating that hemothorax was present in a large proportion of cases and that operation and suture under such conditions were successful in thirteen animals.

The esophagus has also been the seat of active

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experimental investigation, and it may be said that all such experiments have been made possible by the introduction of differential pressure, the use of which is absolutely essential in esophageal operations upon the normal dog. Tiegel, Sauerbruch, Green and Janeway, Meyer and Mayer have done progressive work along these lines, although results are somewhat discouraging. Thus far efforts to approximate the proximal end of the esophagus and stomach after resection of any considerable portion of the esophagus have been attended with a high mortality. The use of buttons for such anastomoses has been to a great extent abandoned on behalf of the direct suture, but leakage has occurred even with the latter, partly, if not wholly, as a result of the excessive tension on the approximated parts. Green and Janeway have found that the approximation of the proximal portion of the esophagus and the prepyloric portion of the stomach is possible, and they report a series of six favorable results after excision of the lower esophagus and cardiac portion of the stomach.

Experimental surgery of the heart has contributed features which will undoubtedly be of value in operations on the human being. Haecker and Sauerbruch have demonstrated the practicability of the transpleural approach to the heart. They claim that this approach is of value primarily because many bullet and stab wounds of the heart involve the pleura and lung, and that heart suture without the repair of lung injury and the removal of hemo- and pneumothorax is an incomplete procedure. They have demonstrated that, with the pleura opened under low differential pressure, the concurrent slowing of the pulse-rate facilitates suture of the heart muscle. They advocate, furthermore, temporary pressure of the vessels at the base of the heart during the introduction of sutures to the ventricles to diminish the blood leakage after the opening of the pericardium, and they have shown that almost complete occlusion of these vessels may be maintained in rabbits for more than a minute without fatal results.

The introduction of differential pressure has made possible certain investigations in pathological physiology in which valvular lesions have been artificially produced by the introduction of ligatures in the region of the mitral valve. Carrel has removed and transplanted sections of the thoracic aorta and vena cava.

*(To be continued.)*

## Reports of Societies.

### AMERICAN LARYNGOLOGICAL ASSOCIATION.

THIRTY-SECOND ANNUAL MEETING, HELD IN WASHINGTON, D. C., MAY 3, 4, 5, 1910.

JAMES E. LOGAN, M.D., *President.*
JAMES E. NEWCOMB, *Secretary.*

#### I. THE NASAL PHENOMENA OF NEURASTHENIA.

By CHARLES PREVOST GRAYSON, M.D. (Abstract.)

Frequency and severity of neurovascular nasal disorder as a complication of neurasthenia. Of too common occurrence to be regarded as merely coincidental. Possessed of therapeutic as well as pathologic importance. Occurs in both essential and symptomatic neurasthenia, and in both the nasal phenomena are unmistakably of nervous origin. Not to be confused with hay fever or vernal catarrh. No hypersensibility to irritants of external origin. Disturbing factor evidently comes from within, and its action is probably central rather than peripheral. Although ordinary symptoms of peripheral irritation may be absent, yet the actual intranasal conditions are as strongly marked in neurasthenia as in the periodic violence of hay fever. Vaso-paresis and infiltrative tumefaction of turbinates pronounced. Quite sufficient to account for or, at least, aggravate the headache, mental apathy and even the melancholia of neurasthenia. Its relief, therefore, of considerable therapeutic importance with reference to cure of the central nervous derangement. It is an example of the danger of prolonged alteration of physiologic processes eventuating in actual pathologic changes. The repeated disturbance of arteriovenous balance in nasal mucosa leads in time to persistent vasoparesis with all its consequences. Therapeutic neglect of this condition will greatly hinder the success of general treatment of the neurasthenia. Local measures of relief: Cauterization alone of little value, but if serum-distended turbinates are first drained by free scarification or multiple puncture, chromic acid or galvano-cautery will then prove effective. Glycerophosphates and strychnine of collateral systemic value. Analogy between results of local treatment in these cases and the removal of adenoid growths in children. Mental improvement equally prompt and remarkable.

DR. B. R. SHURLEY, Detroit, said that there are a number of cases that come under the observation of the rhinologists which are classified under the term of neurasthenia, and they are perhaps the most abused of all that come under the observation of the different specialists. He had been greatly interested in some problems along this line, and some time ago had been privileged to make observations on carrier pigeons after a long flight, — making sections of the spinal cord and observing the action of fatigue under the microscope, — and there is a complete change in the cell structure of the pigeon that has been over-fatigued as compared with one that has been at rest. He is confident that in all these cases there is a definite reason, which we are not always able to ascertain, to explain the different vasomotor neuroses so often presented. Another class of cases has been demonstrated to be due to actual changes in the natural secretions. This is in the line of physiology, and we are just beginning to understand that a large number of these so-called neurasthenics are cases of atypical Graves' disease and myxedema. Dr. Grayson had spoken of the effect of the glycerophosphates on the throat, and the marked changes in the air passages. There is a drying of the air passages in some of these neurasthenics which responds promptly to properly regulated doses of sheep's thyroids; iodine, also, is of great value in regulating this condition. Many of these thyroid conditions are due to loss of balance of the governing influence of the thyroids, pituitary bodies, etc., and by supplying the deficiency in the body when indicated results are reached that are well worth while.

DR. SOLIS COHEN, Philadelphia, remarked that Dr. Sajous, who is at present in the lead in the investigations of the internal secretions, had stated that he owed his interest in the subject to the attention paid to thyroid cases when he was in Dr. Cohen's clinic.

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DR. J. P. CLARK, Boston, said that while there may be cases in which the nasal symptoms are due to what is termed neurasthenia, yet none would feel satisfied in making a diagnosis of neurasthenia for nasal conditions, and if some physical conditions, such as described by Dr. Grayson, could be found, we would all be pleased. The more we know of nasal conditions, the more cases we will be able to remove from the classification of neurasthenia. In one case he had treated both antra contained a thick glairy mucosa which came out in almost a solid mass, and by clearing out the antra the patient was entirely rid of the local symptoms that were affecting his health very markedly. That belonged to the class of cases that might easily have been overlooked and classified under neurasthenia.

DR. R. C. MYLES, New York, said that he had found in cases of neurasthenia the same nasal phenomena described by Dr. Grayson. The conditions have sometimes a common and sometimes a local cause, and the difficulty seems to be in differentiating at the outset the proper relief for these cases. They do not stand manipulative procedure well, and certain types have to be referred back to the general physician to be relieved of their toxemic conditions. It is a peculiar fact that during the past winter he has seen more incipient thyroid cases than in the ten years previous. Whether or not this may be due to the extensive use of thyroid extract, he could not say.

DR. H. L. SWAIN, New Haven, said that in considering this matter we should bear in mind that there are anatomical conditions and physical deviations in the mucous membranes of those who suffer from rhinitis or disturbed internal secretions differing from those possessed by persons with normal structures. His work in cases of edematous rhinitis has convinced him that these patients have thinner vessel walls, less fibrous connective tissue distributed through the membranes and fewer of the muscle elements which contract than in other pathological conditions; and in this lack of firmness in the texture of the vessel wall there is the physical cause for the condition in the nose. He agreed with Dr. Shurley that there are types of exophthalmic goiter or myxedema which are responsible for many of the phenomena in these cases of nerve tire or neurasthenia.

DR. GRAYSON said that he would not for a moment presume to make a diagnosis of neurasthenia simply from the nasal conditions, but that a large proportion of such cases manifest the phenomena he had described. In the cases described the conditions persisted for months, many with scarcely any remission, and must have been due to other conditions than autotoxemias, for under treatment their general condition had greatly improved, yet the local condition continued. Dr. Shurley's remarks about the pathological conditions were decidedly illuminating, and when further studied may prove of decided benefit to this class of patients.

### II. A COMPARATIVE STUDY IN THE ANATOMY OF MAN AND THE ANTHROPOID APES, WITH THEIR PHYSIOLOGICAL SIGNIFICANCE; EXHIBITION OF GROSS AND MICROSCOPIC SPECIMENS.

DR. T. GORDON WILSON, Chicago.

Dr. Wilson pointed out that the evolution of the larynx from a sphincter-like organ at the entrance to the respiratory tract to one in which the primitive function was overshadowed by the part now played by it in inter-relational life made the larynx especially interesting and important for comparative study. The paper was confined to a study of the ventricles and their appendages, and to the relation of the thyro-arytenoid muscle to the inferior vocal cord. Gross and microscopic examinations have been made of the larynges of a white man, a Chinaman, an orang-utan, several macacus monkeys, and a marmoset. By means of lantern slides and microscopic sections thrown on the screen the various points in the progressive series were demonstrated, especially the approximations of the muscle to the inferior vocal cord. In the second part of the paper there were discussed the various hypotheses which from time to time have been advanced to account for the presence of ventricles in the larynx. It was held that however adequate some of these hypotheses might appear to be to explain the presence of ventricles in one species, the impossibility of applying any one hypothesis to the anthropoidea in general was an obvious defect. Dr. Wilson insisted that if any general function was to be associated with the laryngeal diverticula, one must look for it along the lines of the general principle underlying laryngeal development, namely, the requirements of inter-relational life. With this in view, it was suggested that by means of such sacs the animal was able to modify the voice to express emotional states. In man, the close approximation of the musculature to the cord offered a finer mechanism to produce the same result, and so one would expect a diminution in the development of the diverticula. This appears to be so.

DR. J. PRICE-BROWN, Toronto, told of the case of a young woman twenty-five years of age, with a tumor in the neck which was soft and would disappear on inspiration and appear on expiration. He had concluded that it was a laryngeal sac, although he had had no previous knowledge on that subject, and that it was filled by air. His confrères had disagreed, and thought it was a thymus or thyroid gland and was drawn into the thorax during inspiration. He wished to know Dr. Wilson's opinion on the subject.

DR. WILSON replied that the question of laryngeal sacs was a very complex one, but that he had little doubt the case described by Dr. Price-Brown was a laryngeal sac. A similar case is reported in literature.

### III. EXHIBITION OF ANATOMICAL PREPARATIONS DEMONSTRATING COMMUNICATIONS BETWEEN THE BLOOD VESSELS SUPPLYING THE DURA, THE ORBIT AND THE NASAL CAVITIES.

By DR. GEORGE E. SHAMBAUGH, Chicago.

Zuckerkandl, by injecting the longitudinal sinus, has been able to inject the mucosa of the frontal sinus and some of the mucosa of the nasal cavities, and recently Killian has demonstrated the blood-vessel communications between the frontal sinus and the dura, but further than this little important work has been done along these lines. The question seems one of great clinical importance, and Dr. Shambaugh undertook to demonstrate these communications on the heads of fetuses. Securing them quite fresh, he was able to do this very successfully. The heads were then decalcified and sections were removed, showing the nasal cavities, the orbit and the brain cavity. Thick sections were cut, colored and mounted on slides, and one can see in these the blood vessels going through. With a stereoscopic microscope there is no difficulty in demonstrating these vessel communications between the various nasal cavities and the dura. The anatomical preparations showed these communications very beautifully.

DR. H. P. MOSHER, Boston, said that every one must thank Dr. Shambaugh for presenting these beautiful specimens and bringing this subject up to date.

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IV. THE MANIFESTATIONS OF RECURRENT INFLUENZA ON THE NOSE AND THROAT.

By Dr. Joseph L. Goodale, Boston.

Dr. James L. Newcomb, New York, said that he himself belonged to the class of cases described by Dr. Goodale, and that he wished to testify to the excellence of Deland, Fla., for such conditions. The air is dry and pleasant, and, furthermore, there is a good hotel there, which is not found in many Florida places, where you can lead a quiet life.

Dr. Casselberry said that the essayist had described cases symptomatically which are familiar to all, but that he himself has not been accustomed to ascribing them all to a common etiological factor, — there are other elements, and he wished to emphasize the good that will result in many cases of persistent tickling and irritation of the pharynx by the destruction of some one particular follicle or group of follicles in the pharynx. Of course the general cauterization of follicles in cases of follicular pharyngitis was familiar to all, but that was not the topic under discussion. The thorough cleansing of the secretions is next in importance as a therapeutic measure. His own experience in regard to abbreviating the course of these conditions differs from that of Dr. Goodale. He has frequently been impressed with the fact that after having endured for days they are cut short decidedly. He has had greater benefit from the dry climate of the West than from other localities.

Dr. H. L. Swain, New Haven, said that the patient will often assure you that you have hit the spot when you hit the lingual tonsil.

Dr. James E. Logan, Kansas City, said that the paper was very interesting to him in the light of some investigations he has been pursuing for a number of years. His experience has led him to believe that the infectious area is not to be attributed to the conditions in the faucial tonsils; they are more in the avenue of the digestive tract and are less liable to affect the upper respiratory tract than is usually believed. He is inclined to believe that the infections that pervade the upper respiratory tract are, to a large extent, located in the vault of the pharynx — you will find there the pneumococcus catarrhalis, the staphylococcus, the streptococcus, etc., in their various manifestations, but in so slight a manifestation that the little areas are easily overlooked. During the later years he has been able to find these recurrent "upholstered" conditions, which formerly he was not able to recognize as being of any value whatever, and he was glad to hear Dr. Grayson say that the pharyngeal tract is the place to look for these bacterial invasions. In his opinion, the only way to treat these conditions and prevent their recurrence is by the removal of these "upholstered" masses. He has found the application of a 30% solution of nitrate of silver to these recessi, through the oro-pharynx, very effective.

Dr. Joseph L. Goodale, Boston, said that he prefers the carbolic acid as the caustic agent during the acute inflammatory stage rather than the silver nitrate, which is best suited for use in the interval, to prevent recurrence. It requires a good deal of skill and practice to be able to treat the nasopharynx successfully.

V. QUININÆ AND UREA HYDROCHLORATE AS A LOCAL ANESTHETIC.[1]

By E. Fletcher Ingals, M. D., Chicago. (Abstract.)

Papers on this subject have appeared in the *Journal of the American Medical Association*, by Dr. Thiebault, 1907; Dr. E. J. Brown, 1908, and Drs. Hertzler, Brewster and Rogers, in 1909. The author of the present paper confirms the former statements that this is a safe and efficient local anesthetic, but he has not been able to demonstrate the prolonged action claimed by some of the other observers. He has used this anesthetic in many cases of nasal surgery, and in every instance has obtained excellent results. This drug in a 20% solution applied locally produces anesthesia as profound as a similar solution of cocaine, but it requires about four times as long to obtain results. A solution of 5% of cocaine and 15% of urea quinine in 1: 2000 of suprarenalin has been found most satisfactory. It acts as promptly and sometimes apparently more quickly than a 20% solution of cocaine in the suprarenalin solution. The reaction following cauterizations in the nares has been much less when this solution has been employed as an anesthetic than when the 20% solution of cocaine has been used.

Submucous injections of this drug have given profound and deeper anesthesia than its topical applications, but some of them have been followed by prolonged pain and a good deal of swelling. On account of the prolonged anesthesia claimed for this remedy, it would appear to be strongly indicated in the treatment of hyperesthetic rhinitis and hay fever. The author's experience does not make him as hopeful of the results in these affections as would have been anticipated from the former reports on the drug, nevertheless he considers that it should be given a fair trial. As a local anesthetic when used hypodermically in from ¼ to ½% solution, it appears to be very efficient, and it is shown to be absolutely safe by the fact that 100 gr. of the drug were injected into the veins by Brewster in the course of six hours in a case of pernicious malaria with recovery of patient. The author highly recommends this anesthetic in combination with cocaine and suprarenalin for all intranasal surgical operations.

Dr. Solis Cohen, Philadelphia, said that he has used this preparation for many years in general practice in remittent fever, especially pernicious fever. There is a form in which the patient suffers from chills, and if this is given in doses of 60 gr. it will often prevent paroxysms. He has used it also in removing growths from the larynx, with as much facility as with cocaine. He considers it a very satisfactory anesthetic.

Dr. Casselberry, Chicago, inquired whether Dr. Ingals had had any experience with it in tuberculosis of the larnyx. His remarks would seem to establish its utility in such conditions on account of its long duration.

Dr. Shurley said that he had started using this combination some time ago on the advice of a rectal specialist who had some most remarkable results with the infiltration of this anesthetic, but after using it on a few cases and hearing some unfavorable reports from others who had tried it, he discontinued its use.

Dr. T. Gordon Wilson, Chicago, said that he would like to know more about this from a different point of view. Some years ago he had been interested in the subject of the nerve endings, and the first thing that had to be done was to differentiate between the question of anesthesia and the question of nerve death: on the one hand, the suppression of the nerve function, and on the other hand, their death — protoplasmic death. The reason why you get so long an anesthesia is that you produce death of the particular nerve endings. It would, therefore, seem to be very dangerous to inject it into a nerve trunk.

Dr. John R. Winslow, Baltimore, said that for the past few months he has performed practically all his tonsillectomies under quinine anesthesia, with much

[1] Presented at the American Laryngological Association at Washington, May, 1910.

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satisfaction, though in a stronger solution than usually used, — from 3 to 5%. By making the injection from fifteen to twenty minutes before operation, he finds that not only is the anesthetic effect increased, but that no hemorrhage follows the incision. He has had no bad results, though there is considerable swelling and edema for a while. His patients, however, do not admit that they are relieved of the after-pain characteristic of operations on the tonsils.

DR. H. L. SWAIN, New Haven, said that if the remarks made by Dr. Wilson in regard to protoplasmic death prove to be true, it would be very satisfactory. If the nerves in a tubercular lesion would remain dead until the patient passed away, we would have a great addition to our armamentarium.

DR. SOLIS COHEN said that he had had under treatment a very severe case of tubercular ulcer of the larynx in which this anesthetic allowed the patient to swallow for two or three days. A 20% solution was used. It required two or three minutes to produce the anesthesia.

DR. INGALS, closing the discussion, said that Dr. Cohen had answered Dr. Casselberry's question. He himself, however, had found that it required from fifteen to twenty minutes to produce the anesthesia. As to the discomfort arising from the injection, he judged that there was a good deal of swelling and that the patient might be very uncomfortable. He had not injected the tonsil at all. He and Dr. Wilson had discussed the subject of the nerve endings a few days earlier, and had agreed that it would be a fine thing if the nerve endings could be killed for a time at least. His experience in regard to eliminating the use of a vasomotor constrictor has been different from that reported by Dr. Winslow — the bleeding seemed to be as great as after any other anesthesia. According to his understanding, there is considerable anesthesia, lasting perhaps for ten or twelve hours.

VI. THE SYNDROME OF THE SPHENOPALATINE GANGLION.

By DR. GREENFIELD SLUDER.

DR. HARRIS P. MOSHER, Boston, said that asthma can in quite a number of cases be stopped promptly and for a moderate length of time by proper treatment directed to the sphenopalatine ganglion, and that we are indebted to Dr. Sluder for the first definite and full anatomical description of this ganglion. He has also successfully treated an obstinate case of moderate rhinitis.

DR. T. GORDON WILSON, Chicago, said that to him the most interesting part of the paper was the association of definite nasal symptoms with lesions affecting a sympathetic ganglion. The changes in vasomotor and secretory disturbances described by Dr. Sluder are important and suggestive, but the gustatory phenomena which he finds are difficult to reconcile with our present accepted knowledge of the course of these phenomena. The results of testing for taste in the anterior part of the tongue are subject to so much variation in healthy individuals, are subject to so much variation, that most men who have worked on this subject agree that to obtain reliable results taste must have been carefully tested before as well as after operation. The absence of such a record appears to lessen the value of Dr. Sluder's findings.

DR. SLUDER, closing the discussion, said that Dr. Mosher's observations on asthma were most interesting, and he hoped to try it in such cases. He was familiar with the work of Dr. Stein, of Chicago, who proposed treating cases of sneezing vasomotor rhinitis by injection into the nerve trunks as they enter through the sphenopalatine foramen. His own attempts with this condition have been few, and the results have been disappointing. He had been careful in expressing himself in regard to dealing with the question of taste. There is no anatomy, so far as he knows, to explain these phenomena — they are apparently inexplicable. He is also aware of the difficulty of dealing with the subject of taste in the anterior two thirds of the tongue. He has tried to follow the literature of the sense of taste, but it is exceedingly extensive, and he has no idea that he has read it all.

(*To be continued.*)

## Book Reviews.

*A Textbook of Veterinary Anatomy.* By SEPTIMUS SISSON, S.B., V.S., Professor of Comparative Anatomy, Ohio State University, College of Veterinary Medicine. Octavo of 826 pages, 588 illustrations. Philadelphia and London: W. B. Saunders Company. 1910.

This fine piece of bookmaking containing 826 pages, including the index, is comparable to the best works on human anatomy, and is a decided addition to good veterinary literature of English-speaking people.

"The lack of a modern and well-illustrated book on the structure of the principal domestic animals has been acutely felt for a long time by teachers, students and practitioners of veterinary medicine," says the author in his preface, though he might have added "in English," for foreign languages offer excellent comparative anatomies, for example, Ellenberger and Baum "Handbuch der Vergleichenden Anatomie der Hausthiere." Yet it is not amiss to say at once that the work under consideration ranks with the best.

Modern methods of preparation have materially altered prevailing opinion regarding the normal form of certain of the viscera, and the results are given in this volume. "Embryological and histological data have been almost entirely excluded, since it was desired to offer a textbook of convenient size for the student and a work of ready reference for the practitioner."

"Veterinary anatomical nomenclature is at present quite chaotic in English-speaking countries," and so the author has endeavored to exclude certain terms which seem to fulfil no "useful purpose, and others which are clearly erroneous, or otherwise undesirable," and "in many cases the terms agreed upon by the Congresses at Baden and Stuttgart are adopted either in the original Latin or in anglicized form," an excellent plan.

Of the five hundred and eighty-eight exemplary illustrations, often colored, many are original and many are reproductions from Ellenberger and Baum, Leisering, Schmaltz and others, and it is pleasing to note that in all such instances proper acknowledgment has been made.

It is a distinct pleasure to review so admirable a work, a marked advance in English veterinary literature, upon which student and practitioner may well congratulate themselves and no medical school can afford to be without. It is an exhaustive gross anatomy of the horse, ox, pig and dog,

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including the splanchnology of the sheep. There is but one regret, namely, that so extensive a volume should not consider the anatomy of the bird, taking the domestic fowl as the type.

*An Introduction to the Study of Hypnotism, Experimental and Therapeutic.* By H. E. Wingfield, M.A., M.D., B.C. Cantab. New York: William Wood & Co. 1910.

Hypnotism is a subject which too many physicians are prone to regard with suspicion, skepticism or contempt, and which sometimes suggests to them, as generally to the laity, ideas of the supernatural, the transcendental or the uncanny. Dr. Wingfield's volume presents it in its true light as the science of a psychic condition, dependent on definite psychologic and physiologic laws, and capable of being used for certain therapeutic purposes. After a sane and lucid exposition of the nature and phenomena of hypnosis and the methods of its induction, he describes the principles of legitimate treatment by suggestion and presents a rebuttal in refutation of the case against hypnotism. He makes frequent reference to the work of Sidis in Boston on this subject. Whatever one's prejudices, one cannot help recognizing and being impressed by his serious and absolute honesty of purpose and expression. His admirable book should be read with thoughtful attention by physicians as an introduction to the facts of a field in medicine of whose possible value and importance we are often ignorant or intolerant.

*The Medical Record Visiting List,* or Physicians' Diary for 1911. New revised edition. New York: William Wood & Co. 1910.

This convenient pocket diary not only provides space sufficient for a visiting list of sixty patients a week, but contains tables of valuable information which should be useful to the busy practitioner.

*Hay Fever and Paroxysmal Sneezing (Vasomotor Rhinitis).* By Eugene S. Yonge, M.D. (Edin.), Physician to the Manchester Hospital for Consumption and Diseases of the Throat. Edinburgh and London: William Green & Sons. 1910.

This small book of one hundred and fifty pages is a valuable addition to the literature of this most perplexing disease, not that it contains much that is new, but because it is an able monograph on the subject by an able author. It is a brief compilation of the numerous speculations on etiology and the various methods of treatment, including the author's, of vasomotor rhinitis, so called. As a review it is complete, yet well edited and brief. His own conclusions are not always easy to find, being often blended with those of his predecessors. In general they are interesting and judicial, although not always convincing. He tries to draw a sharp line between hay fever proper, meaning those cases in which the pollen of different plants are evidently the exciting agent, and all other allied cases, grouping the latter under the title of paroxysmal sneezing or vasomotor rhinitis. By his own showing there is too much in common between these two groups to make this altogether logical.

For the last three quarters of a century the group of disturbances which includes the different hay fevers has been one of the most elusive of diseases; both its etiology and its treatment appear periodically to be approaching solution without ever getting there. Some victims sneeze only in June, others only in September; some cannot come near certain animals, others are affected only by something else. Asthma may or may not be related to it. Some cases are relieved or even cured by almost anything, yet others by something else or nothing. This is, therefore, a difficult subject to handle, but one which offers wide fields for etiological imagination. The author follows the lead of the majority of writers in looking at the symptom-complex as primarily caused by a weakness of the nervous system. Although giving credence to most of Dunbar's work, he does not quite arrive at the logical conclusion from this that lack of immunity to the different irritants may be due to the lack of a chemical neutralizing agent in the nasal secretions and that the nervous symptoms may be entirely secondary. He reviews the whole list of local operations which have been recommended, and adds one of his own which has given him good results. It consists in removing under general anesthesia the so-called tubercles of the septum, situated at the junction of the septal cartilage and the ethmoid plate. On the much-discussed question of the influence of intra-nasal deviations in producing the disease, and the benefit to the patient in removing them, he occupies a conservative middle ground. The pallor of the nasal mucous membrane which is often, in this country at least, a very characteristic feature of the disturbance, has not particularly impressed him. Although the disease as seen in England varies somewhat from that with which we are familiar in America, on account of the somewhat different exciting irritants, the careful study by the author of American authorities relieves the book of the objection of being foreign.

*Education in Sexual Physiology and Hygiene.* A Physician's Message. By Philip Zenner, M.D. Cincinnati: The Robert Clarke Company. 1910.

The problem of teaching and learning the physiology and hygiene of the reproductive function is the subtlest and most difficult in the education of adolescents; indeed, it is one which many adults never solve for themselves, which humanity collectively has never solved. All efforts at its solution are tentative; many do more harm than good. The present volume represents the author's attempt, which has the merit of being serious and entirely right-minded. For young children his method seems well adapted. For older children, especially boys, it should seem that a shrewder tone of frankness were more effective. "Sexual virtue is the best policy" is the form which such instruction would have taken from the tongue of wise Ben Franklin.

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THE BOSTON

Medical and Surgical Journal.

THURSDAY, DECEMBER 8, 1910

*A Journal of Medicine, Surgery and Allied Sciences, published at Boston, weekly, by the undersigned.*

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## REPORT OF THE MASSACHUSETTS TUBERCULOSIS COMMISSION.

IN the issue of the JOURNAL for March 17, 1910, we described and commented editorially on a resolve, then pending before the Massachusetts Legislature, providing for the appointment of a "commission to investigate and report upon a system of caring for tubercular patients by state and local authorities"; and in our issue for May 12, 1910, we announced the passage of this resolve, and the names of the commissioners as appointed by Governor Draper. This commission has prosecuted its labors during the past summer, and its report is now at hand. Embodying as it does the investigations and opinions of experts whose recommendations are likely to be of considerable weight, this report deserves attention and careful consideration Its principal data and conclusions may be summarized as follows:

There are estimated to be in Massachusetts approximately 35,000 cases of tuberculosis, of which probably 27,000 are pulmonary. For the accommodation of these cases there are, besides private hospitals, four state sanatoria, seven municipal tuberculosis hospitals, and ward or almshouse provision for tuberculous patients in 21 cities and towns. The hospitals and sanatoria, public and private, have 2,773 beds, accommodating rather more than 5,000 persons each year. The state institutions receive principally cases capable of arrest or cure; advanced cases are generally sent to municipal hospitals or to their homes.

Though recognizing the importance of caring for early cases, the commission considers the segregation of advanced cases to be the most efficient single measure in the effort to stamp out tuberculosis. It therefore recommends that the total accommodation for tuberculous patients be increased to 5,000 or 6,000 beds, chiefly in local hospitals. To encourage the establishment of these institutions, it recommends that the state pay a "subsidy of $5 per week for each non-paying patient in a local hospital which meets with the approval of the trustees of hospitals for consumptives, provided tubercle bacilli are demonstrated." This sum is about half the weekly cost of maintenance of a patient in a tuberculosis institution, and the commission also recommends that the charge to paying patients at the state sanatoria be raised to the same amount. It makes further minor suggestions relative to the administration of these sanatoria; it advises the erection, in connection with the hospital school at Canton, of a state hospital school for tuberculous children; and finally recommends "that the legislature require the establishment of dispensaries for the discovery, supervision and treatment of cases of tuberculosis, by the agency of the local boards of health, in all cities and towns with over 10,000 inhabitants." Four members of the commission believe it advisable, under certain restrictions, for local boards of health to supply needy tuberculous patients with food at their homes. The remainder submit a dissenting minority opinion of three that such relief should be given by private relief societies or overseers of the poor on recommendation from boards of health.

The most significant aspects of this report may be included under three topics, — state subsidy, tuberculosis dispensaries and food distribution. In regard to the importance of segregating advanced cases, the attitude of the commission seems sound. The advanced case, particularly if ignorant or unruly, constitutes the greatest menace to the community, because from him may be distributed the greatest amount of infecting material. The way to stop tuberculosis is to stop the infection of new cases. Supervision and control of advanced cases is, therefore, essential, and the commission believes this may best be obtained in local hospitals. The difficulty in the way of this, as of the attainment of all desirable things, is the expense. A state subsidy, whereby the commonwealth would halve with each community the cost of maintaining in segregation its non-paying tuberculous patients, would help municipalities meet this expense and probably hasten the erection of the needed institutions. Upon careful consideration, the commission believes that such subsidy would be a wise economic measure and would more than pay for itself in the saving of life and health by the decreased

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incidence of tuberculosis resultant from more thorough segregation of advanced cases which in their homes are foci of fresh infection. Perhaps these sanguine expectations are justified. They certainly concur with the results attained by segregation in other infectious diseases. Before they become the basis of action, however, they should be subjected to rigid criticism, for in undertaking subsidy, the state is employing a dangerous agent. The taxpayer is already overburdened, and once the principle of subsidization becomes established and familiar, it is difficult to foresee to what extent it might be carried by those whose charitable enthusiasm is greater than their judgment or their own financial assets.

Similar comment may be made on the suggestions for tuberculosis dispensaries and the supplying of food. There is no end to the desirable things that communities might have, were there money enough to pay for them. But communities, like individuals, must count the cost. If they do not, their fate is the same. Doubtless tuberculosis is a great public evil, which is worth fighting, but so are venereal diseases, and so is cancer. Provisions for dealing with all these must be made gradually, with due regard for the capacities of the public purse. Moreover, the supplying of food is a measure which, though doubtless in certain cases desirable and humane, is, nevertheless, capable of dangerous, proletariat-building possibilities.

These comments are made not in opposition to the spirit of the report, which is a document of great value and importance, but merely by way of suggesting that there are two sides to some of the propositions which it advances. The principles upon which it lays out the campaign against tuberculosis are eminently sound. Only, in endeavoring to carry that campaign into effect, it should be remembered, with due consideration for the recommendation of experts, that human progress is necessarily slow, that something must be left to natural processes which can be aided but not hastened, and that in initiating any new measure of expense the project should be weighed as a question of policy as well as of theoretic desirability.

## NOTIFICATION OF SYPHILIS AND GONORRHEA.

The California State Board of Health is the first to place syphilis and gonorrhea on the list of reportable diseases. This action was taken in a regulation recently issued, which reads as follows:

"*Be it resolved,* That the California State Board of Health declares that, beginning Jan. 1, 1911, syphilis and gonococcus infections shall be reportable and shall be placed on the list of communicable diseases which local boards of health and health officers are required to report to the secretary, it being provided, however, that until further action by this board, physicians may report the facts concerning these diseases by office numbers instead of names of patients.

"*Be it further resolved,* That this board officially calls the attention of the citizens of California to the contagious and infectious nature of these diseases and requests their co-operation in combating them by every available means — educational, sanitary, medical, social and moral."

The California State Board of Health shows much courage by taking the lead in applying to venereal diseases the same measures that experience has suggested for dealing with other infections. The first step towards control and suppression of any disease is a knowledge of the number and location of existent cases. For this the system of notification by number, if conscientiously carried out by physicians, makes a workable provision and should prepare the way for intelligent and concerted action, by education and prophylaxis, towards the eradication of diseases which are a far greater menace to mankind and to civilization than tuberculosis. It will be of interest to observe how this advanced example of California works, how soon it is followed by boards of health in other states and to what extent the position of the California Board will be carried out in practice.

## TYPHOID FEVER EPIDEMICS.

Several minor epidemics of typhoid fever are in progress in various parts of the country. At Annapolis, Md., four more new cases developed during the week ending Dec. 3, making a total of twenty-four, as yet without fatalities, among students at the United States Naval Academy. At Lexington, Va., so many cases have appeared that Washington and Lee University was closed on Nov. 27, to stand closed until Jan. 3, 1911. This epidemic is supposed to be due to an infected water supply. At Windsor Locks, Conn., over fifty cases of typhoid have occurred since Oct. 15, and there have been two deaths. Poor sewage provisions are thought to be responsible for this epidemic. At Hyde Park there has been an unusually large number of typhoid cases this fall. The town board of health, suspecting the water-supply, advised the inhabitants to boil all water used for drinking. Recently a thorough inves-

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tigation of this supply has been made by the Massachusetts State Board of Health, and, in a letter from its secretary to the Hyde Park Board, recommends the continuance of this precaution and the obtainment as soon as possible of a supply better protected from sources of contamination.

The continued recurrence of such epidemics serves only to re-emphasize the insidious dangers of typhoid fever and the seeming impossibility of its extermination by even the wisest sanitary provisions. At such a time the protective possibilities of anti-typhoid inoculation become all the more impressive. From all American army-posts where it is being employed come unanimously favorable reports of its safety, trifling discomfort and efficacy in reducing the incidence and mortality from typhoid. Education and example will be the most potent factors in persuading the public and the medical profession to the general adoption of this valuable prophylactic procedure.

## A TYPHOID CARRIER.

A TYPHOID carrier, who was responsible for the death of two persons from typhoid fever and the illness of over thirty others during the past summer, has been discovered in the person of an Adirondack guide. A baffling outbreak of the disease, involving at least thirty-six persons, occurred in a fashionable camp in the Adirondack Mountains, and experts were called in to discover the cause. The water supply was found to be absolutely pure, but the milk, as used by the residents, proved to be contaminated. It was shown that this milk was originally of the finest quality and that it was gathered and delivered under all possible sanitary precautions. It was learned, however, that the last person who handled it was the guide referred to, and an investigation of this individual revealed the fact that he was suffering from chronic dysentery and was also a prolific producer of typhoid bacilli. The State Department of Health was appealed to, but declined to take any action, on the ground that there is no law in the state authorizing the health authorities to interfere in a case of this kind. It will be remembered that the notorious "Typhoid Mary" was kept secluded for more than two years on North Brother Island, but this was by the purely local action of the New York City Health Department. The man consented of his own accord, however, to come to New York, at the earnest request of Dr. Charles E. North, of the New York Milk Committee, and, if the money can be secured for his maintenance, Dr. North purposes giving him a thorough course of Metchnikoff lactic acid treatment, in the hope, possibly, of putting a stop to the production of typhoid germs.

## MEDICAL NOTES.

FIRE IN A CANADIAN HOSPITAL. — Report from Toronto, Ont., states that on Dec. 1 the Toronto Free Hospital for Consumptives, at Weston, was destroyed by fire. The ninety-two patients in the hospital, of whom forty are helpless, were safely removed.

ASSOCIATION OF FOOD AND DAIRY DEPARTMENTS. — The annual convention of the National Association of State and National Food and Dairy Departments, which was held on Nov. 28 to Dec. 1 in New Orleans, La., was attended by representatives from nearly every state. One of the principal topics under discussion at the sessions was "The Uniformity of National and State Pure Food Laws."

DIPHTHERIA IN CHICAGO. — It is reported that diphtheria is epidemic in Chicago. On Nov. 27 there were about eight hundred cases in that city. Stringent measures have been taken to prevent further spread of the infection, and an additional sum of $10,000 has been voted to meet the expense of combating the disease.

HARVEY LECTURES. — The third lecture of the series of 1910–11 of the Harvey Society will be given in New York on Dec. 10 by Dr. Harvey Cushing, of Baltimore, Md., on "Certain Clinical Aspects of Dyspituitarism." The postponed lecture by Professor Castle will be given on Feb. 25, 1911.

SUSPENSION OF PUBLICATION OF THE *Montreal Medical Journal*. — It is announced that with its current December issue the *Montreal Medical Journal* will cease publication. It is understood that this is done through friendly agreement with the Canadian Medical Association, whereby the work hitherto done by the *Montreal Journal* will continue to be represented in a new publication.

DEPORTATION OF A CASE OF TRACHOMA. —In last week's issue of the JOURNAL, we referred to the case of an Armenian immigrant who, being ordered deported on account of having trachoma, appealed for a writ of habeas corpus on the ground that she had married an American citizen. This appeal has been denied by the United States Dis-

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trict Court, and the woman will be deported unless she obtains a reversal of this decision before the Circuit Court of Appeals.

Epidemics of Cholera. — During the week ending Dec. 3, 27 new cases and only 3 deaths of Asiatic cholera were reported from Italy, a slight decrease from the record of the preceding week. Report from Lisbon, Portugal, states that the disease is epidemic in Funchal, the capital of Madeira, but the number of cases is not given.

Movement against Opium in China. — There is apparently a definite movement in China against the sale and use of opium, except for medicine. Advices from Pekin state that on Dec. 2 the imperial senate passed a resolution forbidding the inter-provincial transportation of the drug after July, 1911, and its consumption by smoking after January, 1912. This resolution is said also to advocate abrogation of the opium treaty with Great Britain, thereby preventing further importation from India. The abolition of illegal opium traffic by oriental initiative seems, however, almost incredible; and one is tempted to mistrust the genuineness of reform from a habit of such long duration.

### BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston.— For the week ending at noon, Dec. 6, 1910, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 42, scarlatina 27, typhoid fever 12, measles 24, smallpox 0, tuberculosis 56.

The death-rate of the reported deaths for the week ending Dec. 6, 1910, was 17.80.

Boston Mortality Statistics.—The total number of deaths reported to the Board of Health for the week ending Saturday, noon, Dec. 3, 1910, was 219, against 185 the corresponding week of last year, showing an increase of 34 deaths, and making the death-rate for the week, 16.95. Of this number 120 were males and 99 were females; 213 were white and 6 colored; 131 were born in the United States, 86 in foreign countries and 2 unknown; 52 were of American parentage, 137 of foreign parentage and 30 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 47 cases and 0 deaths; scarlatina, 31 cases and 0 deaths; typhoid fever, 15 cases and 0 deaths; measles, 27 cases and 1 death; tuberculosis, 59 cases and 25 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 24, whooping cough 6, heart disease 29, bronchitis 5. There were 17 deaths from violent causes. The number of children who died under one year was 31; the number under five years, 50. The number of persons who died over sixty years of age was 75. The deaths in public institutions were 70. Cerebrospinal meningitis, 2 cases. Anterior poliomyelitis, 2 cases.

Of the above infectious diseases the following were non-residents: Diphtheria, 1 case. Consumption, 4 cases and 3 deaths. Scarlet fever, 3 cases.

Deducting deaths of non-residents, the total is 189 and the death-rate is then 14.63.

Nomination of a Physician for the School Board. — Dr. Thomas F. Leen, of Boston, has been nominated by the Citizens' Municipal League and by the Public School Association as candidate for election to the Boston School Board.

Newly Registered Physicians. — Forty-one candidates, of whom two were women, passed the recent examination by the Massachusetts State Board of Registration in Medicine and are now entitled to practise under the laws of the commonwealth.

A Living Centenarian. — Richard K. Powers, of Lancaster, Mass., is locally reputed to have been born on Nov. 27, 1810, in Sterling, Mass. It is reported that he recently celebrated the supposed centennial anniversary of his birth by sawing cord wood in his back yard. He is said to attribute his longevity and good health to habitual vigorous physical exercise.

Appointment of School Physicians. — The Boston Board of Health recently recommended a reduction in number and an increase in salary of the school physicians in this city, of whom there are at present 80. It is now proposed by the mayor to increase this number to 115 and raise the salary of each physician from $200 to $300. Action on this proposition is still undecided.

Work of Industrial School. — The sixteenth annual report of the Massachusetts Industrial School for Crippled and Deformed Children, recently published, presents the record of the valuable work done by this institution during the past year. A year ago, the number of pupils was increased from thirty to thirty-five, and the opening of a new fourth schoolroom this fall makes possible the admission of about twenty-five more. A special appeal is made for additional contributions of money to enable the provision of

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an open-air room for children of tuberculous susceptibility. The annual Christmas celebration and sale will be held at the school on Dec. 23.

Sister Raphael Successor to Sister Gonzaga. — In an editorial in the issue of the Journal for Nov. 24 we noted the retirement from the Carney Hospital, South Boston, of Sister Gonzaga, who was associated with the hospital for thirty years, and since 1881 had been its sister superior. Her successor, who has recently assumed charge, is Sister Raphael, formerly superior of St. John's Hospital, Lowell, Mass. Sister Raphel, who was born at Emmetsburg, Md., served as an army nurse during the Spanish War and has also been in Panama and in the West.

Needs of Milk and Baby Hygiene Association. — In a communication to the public press, the treasurer of the Boston Milk and Baby Hygiene Association states that since the beginning of its fiscal year, June 1, 1910, the association has received subscriptions to the amount of nearly $8,700. There are at present 607 babies registered at the stations of the association. To complete the work of the current fiscal year there will be need of at least $7,400 more, for which earnest appeal is made to the public.

The School Lunch Problem. — At a conference held in Boston on Dec. 3 by the Woman's Educational and Industrial Union on the problem of the school luncheon, an address was made by Dr. George S. C. Badger, who pointed out that the unpalatable or unhygienic school lunch emanates as often from the home of the ignorant well-to-do as from that of the needy poor. Education of parents seems a wiser agent in securing proper nutrition of children than even discriminating free distribution of school luncheons by public or private charity. The risks of pauperization are even greater to society than those of malnutrition.

Decrease of Tuberculosis in Boston. — The seventh annual meeting of the Boston Association for the Relief and Control of Tuberculosis was held on Nov. 30. The reports of the officers described the activities of the Association during the past year. This year has seen the establishment by the Association of the Prendergast Camp for convalescent or arrested cases of phthisis, which cost over $5,000. During this year, also, there were given under the auspices of the Association 81 lectures, chiefly to labor unions, and over 4,500 anti-spitting cards and more than 35,000 other pieces of educational literature were distributed. Attention was called to the decrease in the total number of deaths from tuberculosis in Boston from 1,227 in 1903, the year in which the Association was organized, to 1,073 in 1909. Mr. Robert Treat Paine was elected president of the Association for the ensuing year, and Dr. Arthur K. Stone its vice-president.

### NEW YORK.

A Victim of the Folding Bed. — The folding bed has claimed another victim in New York. Benjamin Lott, a civil engineer, died on Dec. 1 in the Harlem Hospitals from injuries he had received the night previous by the sudden closing of a folding bed in which he and his wife were sleeping. There was a dislocation in the cervical vertebræ, caused by the sides of the bed which caught his neck and held it tight, and from the moment of the accident he was completely paralyzed from the seat of injury down. Mrs. Lott, who was thrown on her head, which was pressed between the mattress and the pillow, was nearly suffocated before she was rescued.

Quarterly Mortality Report. — The condensed quarterly report of the Bureau of Records of the City Health Department shows that in the quarter ending Sept. 30, 1910, there was a decrease of 2,165 in the total number of deaths from the average of the past five years. In almost all diseases there was a smaller mortality than the quinquennial average, and among the largest decreases from this average were the following: Diarrheal diseases under five years of age, 778; apoplexy and softening of the brain, 318; organic heart diseases, 171; Bright's disease and acute nephritis, 165; pulmonary tuberculosis, 136; simple meningitis, 111; pneumonia, 94; cerebrospinal meningitis, 80. Among the few increases from the quinquennial average were the following: Cancer, 49; chronic bronchitis, 5; influenza, 3.

Low Death-Rate for November. — The low record in the death-rate reached in October was surpassed by the figures for November, the mortality in the city representing an annual death-rate of 13.89, as against 13.90 in the month of October and 15.04 in November, 1909. This is somewhat remarkable, as many of the diseases on the list show more or less increase in deaths. Among the diseases in which there was an augmented fatality were the following: The weekly average of deaths from measles increased from 2

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in October to 4 in November; the weekly average from scarlet fever, from 2.5 to 5; from whooping cough, from 3.75 to 4.25; from diphtheria and croup, from 16.5 to 25.75; from influenza, from 1.5 to 3.25; from pulmonary tuberculosis, from 153.25 to 155; from acute bronchitis, from 11.75 to 19.5; from pneumonia, from 71.75 to 94.5; from bronchopneumonia, from 64.5 to 73.5; from apoplexy and softening of the brain, from 23.25 to 25.5; from organic heart diseases, from 112.25 to 137; and from Bright's disease and acute nephritis, from 88.75 to 108.25. Among the diseases in which there was a diminished mortality were the following: The weekly average of deaths from typhoid fever declined from 17.75 to 15.75; from epidemic cerebrospinal meningitis, from 5.5 to 2.75; from diarrheal diseases, from 143.25 to 65.5; from diarrheals under five years of age, from 133.75 to 57.5; from cancer, from 76.25 to 70; from appendicitis and typhlitis, from 14.25 to 8.25; and from puerperal diseases, including septicemia, from 10.5 to 8.75. In the week ending Nov. 26 but 5 deaths were reported from typhoid fever, the lowest number from this disease since the third week of May, last. The corrected death-rate for the month, excluding non-residents and infants under one week old, was 13.18.

## Current Literature.

MEDICAL RECORD.

Nov. 26, 1910.

1. BEYER, H. G. *The United States Naval Medical School.*
2. SOUCHON, E. *The Philosophic Anatomy of the Liver.*
3. MAGNUS-LEVY, A. *Chemical Problems in Diabetes.*
4. *DEAL, F. A. *Tuberculin Treatment in Advanced Stages of Tuberculosis. A Report of Seventeen Cases Treated with Tuberculin Serum in Hospital Practice.*
5. WELT-KAKELS, S. *On Preliminary Examination of Children at the Dispensary as a Means of Protection against Contagious Diseases.*
6. VANDEGRIFT, G. W. *The Practical Value of a Positive Complement Fixation Test in Syphilis.*

4. Deal reports seventeen cases of advanced tuberculosis, fourteen pulmonary, one laryngeal and two joint — in which he used tuberculinum purum (Koch's old tuberculin from which the toxic albumoses have been eliminated). He finds that this purified tuberculin properly used is a safe remedy in such cases, and that it often relieves fever and catarrhal symptoms and reduces the amount of infiltration. [L. D. C.]

NEW YORK MEDICAL JOURNAL.

Nov. 26, 1910.

1. RUNNELS, S. C. *The Carbon Compounds of Arsenic in the Treatment of Syphilis.*
2. BEEBE, S. P. *The Chemistry of Cancer.*
3. RUGGLES, E. W. *Supplementary Report on the Hot-Air Treatment of Phagedenic Chancroid and Chancre.*
4. FITZPATRICK, C. P., AND ATKINSON, J. P. *The Introduction of Large Quantities of Gases into the Circulatory Apparatus.*
5. WHITALL, J. D. *Case of Sesamoid Bone of the Knee.*
6. WILE, I. S. *Clinical Statistics.*
7. ROBINSON, B. *Treatment of Symptoms in Hospitals.*
8. MCCARTHY, J. F. *An Improved Operating and Observation Endoscope for the Anterior Urethra.*
9. WOLFER, J. A. *Acute Myelogenic Leukemia.*
10. DICKEN, W. E. *Some Steps towards the Prevention of Post-Operative Exudates.*

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

Nov. 26, 1910.

1. JACKSON, C. *Esophageal Stenoses following the Swallowing of Caustic Alkalies.*
2. DEAN, L. W. *Changes in the Nose after Widening the Palatal Arch.*
3. SMITH, H. B. *An Apparatus for Supporting and Holding the Head and Shoulders in Cerebellar and High Spinal Operations.*
4. SMITH, R. R. *Enteroptosis, with Special Reference to Its Etiology and Development.*
5. OCHSNER, A. J. *Surgical Aspects of Enteroptosis.*
6. *MUSSER, J. H. *Enteroptosis: The Physician's Viewpoint.*
7. SKINNER, E. H. *The X-Ray Diagnosis of Enteroptosis.*
8. *MARSHALL, H. W. *Arthritis of Gastro-Intestinal Origin. Its Diagnosis and Treatment.*
9. MOFFETT, G. R. *Accurate Formula for Use in the Modification of Cow's Milk in the Artificial Feeding of Infants.*
10. HARRIS, S. *Radical Cure of Malaria: Its Importance and How It is Obtained.*
11. SILL, E. M. *Dietary Studies of Under-nourished School Children in New York City.*
12. HUFFMAN, O. V. *Miner's Consumption.*
13. BARACH, J. H. *Warning against the India-Ink Method for the Spirochete Pallida.*

6. Musser emphasizes the following facts in relation to enteroptosis: The high tension of modern life, especially of the leisure class, is especially productive of the symptoms encountered in enteroptoses. This condition is rarely found in the laboring classes. Victims of this neurosis are generally members of neurotic or degenerating families. These cases from childhood have poor health, especially noticeable in abdominal symptoms. Musser found no evidence of malnutrition or perverted nutrition or toxemia in the metabolic analyses of ten such cases and finds this additional evidence of the strong neurotic element in this condition. Operation often does great harm by calling attention more closely to the abdominal symptoms. If we could recognize congenital ptoses, as he believes these are, early enough, and before the neuroses develop, we might be able to forestall the ill-effects of the insufficiencies which develop later.

8. Marshall has done some very exhaustive experimental work on the bacterial flora of arthritic and non-arthritic cases, and, in endeavoring to adjust theories to the findings, advances the following to explain the intimate relation so commonly seen to exist between chronic arthritic cases and enteroptoses and intestinal stasis or inefficiency. As to the origin of the toxins, which are supposed to be the cause of the arthritic conditions, there are three theories: (1) Some specific organism that produces the toxic substance, which has not yet been discovered, is present in the stools. (2) Ordinary non-pathogenic bacteria develop excessively, and the products of their activities exert a mild irritating effect on joint tissues from being in excess in the blood. (3) Defective digestion produces abnormal chemical products independently of bacterial action that are the cause of arthritis. Examinations, however, of stools of arthritic patients show no constant characteristics or any peculiarities that are not observed in patients who do not have arthritis. The relationship between intestinal toxins and joint lesions must depend on variable formation of toxins, variable absorption of them through the intestinal walls, variable unknown processes in their passage through the liver into the general circulation and diverse resistances of joint tissues. Production of toxins fluctuates with the quantity of nitrogenous food and the abundance of bacteria and hence may be diminished by changing the character of the diet and introduction of micro-organisms, such as lactic acid bacteria, which inhibit the growth of putrefactive bacteria. But patients with arthritis who respond to intestinal

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treatment habitually eat more than their digestive tract is capable of handling, and intestinal putrefaction hence is apt to occur in excess. Excessive amounts of bacterial products from the intestines find their way into the blood and irritate susceptible joints. Hence through the regulation of the activities of the intestinal tract we have, in a certain per cent of cases, a means of favorably influencing arthritic conditions. [E. H. R.]

THE JOURNAL OF EXPERIMENTAL MEDICINE. VOL. 12. NO. 3. MAY 1, 1910.

1. EYSTER, J. A. E. *Studies on the Venous Pulse. 1 A Study of the Diastolic Waves of the Venous Pulse, with Especial Reference to the Possibility of a Wave Due to the Contraction of the Venous Region of the Mammalian Heart.*
2. GUTHRIE, C. C. *Survival of Engrafted Tissues. 1. (a) Ovaries and (b) Testicles.*
3. BURTON-OPITZ, R., AND WOLF, H. F. *The Changes in the Venous Blood Flow on Administration of Amyl Nitrite.*
4. NASMITH, G. G., AND HARRISON, F. C. *Changes Induced in the Blood of Rabbits by Living in an Atmosphere of Water Gas.*
5. *FLEISHER, M. S., AND LOEB, L. *Studies in Edema. VI. The Influence of Adrenalin on Absorption from the Peritoneal Cavity, with Some Remarks on the Influence of Calcium Chloride on Absorption.*
6. MARINE, DAVID, AND LENHART, C. H. *Observations and Experiments on the So-called Thyroid Carcinoma of Brook Trout (Salvelinus Fontinalis) and Its Relation to Ordinary Goiter.*
7. BERRY, J. L., AND MANN, A. *The Complement-Binding Test in Rabies.*
8. ROUS, P. *An Experimental Comparison of Transplanted Tumor and a Transplanted Normal Tissue Capable of Growth.*
9. OPIE, E. L. *On the Relation of Combined Intoxication and Bacterial Infection to Necrosis of the Liver, Acute Yellow Atrophy and Cirrhosis.*
10. *FOWLER, C. C., AND HAWK, P. B. *Studies on Water Drinking. II. The Metabolic Influence of Copious Water Drinking with Meals.*
11. GIBSON, BANKS R., AND BANZHAF, E. J. *The Quantitative Changes in the Proteins in the Blood Plasma of Horses in the Course of Immunization.*

5. Fleisher and Loeb found that adrenalin injected intraperitoneally increases the rapidity of absorption of fluid from the peritoneal cavity, independently of whether the solution to be absorbed is hypotonic or hypertonic or is approximately isotonic with the blood serum. The intravenous injection of adrenalin also increases the absorption of fluid, but not so markedly as does the intraperitoneal injection. They also found that the increase of absorption from the peritoneal cavity caused by the injection of adrenalin is not due to the increased diureses caused by the injection of this substance.

10. Fowler and Hawk found that the daily drinking of three liters of water with meals for a period of five days by a young adult in nitrogen equilibrium produced an increase in body weight and an increased excretion of urinary nitrogen, but a decreased excretion of feces and of fecal nitrogen and a decrease in the quantity of bacteria excreted. They conclude that copious water drinking with meals stimulates protein catabolism and in general is attended by many desirable and by no undesirable features. [R. I. L.]

JULY 23, 1910.

1. AMBERG, S. *The Cutaneous Trichophytin Reaction.*
2. CARREL, A. *Latent Life of Arteries.*
3. FLEISHER, S., AND LOEB, L. *Studies in Edema. The Influence of Nephrectomy and Other Surgical Operations and of the Lesions Produced by Uranium Nitrate upon Absorption from the Peritoneal Cavity.*
4. *FLEISHER, M. S., AND LOEB, L. *Studies in Edema. The Influence of Caffeine on Absorption from the Peritoneal Cavity and the Influence of Diuresis on Edema.*
5. BROWN, W. H. *Observations on the Origin, Distribution, and Significance of Fuchsin Bodies, with Special Staining Technic.*
6. FIELD, C. W. *A Study of an Extremely Pure Preparation of Ricin.*
7. *WRIGHT, J. H. *Neurocystoma or Neuroblastoma, a Kind of Tumor not Generally Recognized.*
8. KNOX, J. H. M., MOSS, W. L., AND BROWN, G. L. *Subcutaneous Reaction of Rabbits to Horse Serum.*

4. Fleisher and Loeb, in summarizing all the experiments in which they studied absorption from the peritoneal cavity, state that changes in the osmotic pressure of the blood represent the principal factor in explaining the variations in the rate of absorption of fluid from the peritoneal cavity. They find no direct relation between an increase in the rate of absorption of fluid from the peritoneal cavity and an increase in the amount of urine secreted. Under the influence of caffeine a greater amount of sodium chloride is eliminated from the body fluids into the tissues or through the kidneys. The writers believe that in the case of caffeine and other similar substances the diuresis is not due primarily to a specific action of the kidney, but to conditions which affect the distribution of sodium chloride in the body.

7. Wright calls attention to a group of tumors now usually classified as glioma, sarcoma, lymphoma or lymphosarcoma. The essential cells of the tumor are considered to be more or less undifferentiated nerve cells or neurocytes or neuroblasts and hence the names neurocytoma and neuroblastoma. Wright reports twelve cases from the literature and his personal experience. In a large proportion of the cases the adrenal was involved. Wright believes that inasmuch as five of the new cases have been recognized within the year, neurocytoma will not prove to be a very rare tumor. [R. I. L.]

SURGERY, GYNECOLOGY AND OBSTETRICS.

OCTOBER, 1910.

1. WALLACE, W. L. *Appendiceal Intussusception. A Case in an Adult.*
2. SCHMIDT, L. E. *On the Diagnostic Possibilities of Skiagraphy of the Vas Deferens, with or without Skiagraph of the Ureter.*
3. LERCHE, W. *A Contribution to the Surgery of the Esophagus. With the Report of Five Cases of Cicatricial Strictures treated by Cutting through the Esophagoscope.*
4. HEANEY, N. S. *Periodic Intermenstrual Pain.*
5. BAZLEY, C. *Intestinal Perforation in Typhoid Fever, with Special Reference to Treatment. Report of Seven Cases.*
6. EDDY, I. H. *The Care of the Puerperal Woman.*
7. *DICKINSON, R. L. *Cæsarean Section for Impassable Contraction Ring.*
8. MILLER, C. J. *Malignant Rhabdomyoma of the Vagina in Children.*
9. *CLARK, J. G., AND NORRIS, C. C. *Conservative Surgery of the Pelvic Organs in Cases of Pelvic Peritonitis and of Uterine Myomata. With Review of the Immediate and After Results in 299 Cases.*
10. DAILEY, N. G. *Total Congenital Absence of the Vermiform Appendix. Review of the Literature and Report of a Case.*
11. PRINCE, E. M. *Cholecystitis Complicating Typhoid Fever, with Report of Two Cases.*

7. Dickinson advocates Cæsarean section for impassable contraction ring under the following conditions: (1) Child living and not enfeebled or endangered by length of labor, long drainage of water or unskilled attempts at extraction. (2) Ring refusing to relax under morphia or to yield to complete etherization, coupled with patient manual dilatation by a skilled obstetrician. (3) Mother in fair condition for a laparotomy and not infected. (4) Request by patient and husband that a somewhat increased risk to the mother be assumed for the sake of obtaining a living child, in lieu of embryotomy. These indications are perfected if (5) at a previous labor, in expert hands, this same condition of the contraction ring has caused loss of a child not unduly large. There are six cases of section for contraction ring reported in available literature. All were in skilled hands. Of five instances, in only one was the section undertaken of choice. Three of the six mothers died. Two children survived. These, however, were all desperate cases and do not contra-indicate the advisability

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of this operation with its now greatly lowered mortality. Dickinson goes carefully into the etiology, clinical picture, diagnosis and treatment of this condition in a most thorough manner.

9. Clark and Norris summarize their article on conservative surgery of the pelvic organs as follows: Practically all pelvic inflammatory cases should be given a course of preliminary treatment before operation. By this method some cases will escape operation entirely, while others can be operated more easily, quickly and safely. A greater number of cases will be found suitable for a conservative operation. If possible, four to six weeks of normal temperature and blood counts should precede each operation. Pus which can be easily reached without traversing the peritoneal cavity should be evacuated at once. The proportion of cases requiring emergency surgery is extremely small. The end results of salpingectomies are disappointing. Pregnancy rarely takes place. Conservation of macroscopically diseased tubes is, however, unsatisfactory. Conservative ovarian surgery offers excellent results provided the ovarian circulation is not impaired. The reason many resected ovaries become cystic is because of interference with blood supply. When it is found necessary to remove both ovaries, an hysterectomy should also be done. Such uteri are useless and often cause subsequent trouble. If it is necessary to remove the uterus, and one or both ovaries can be spared, their preservation will prevent the unpleasant symptoms of the artificial menopause. In the presence of myomata, hysteromyomectomy is the operation of choice in the great majority of cases. If it is possible to amputate across the cervix at such a level as to leave behind corporeal endometrium, scant but regular menstruation will follow if one or both ovaries are preserved. [E. H. R.]

### The Practitioner.

October, 1910.

"Common Ailments" Number.

1. Duckworth, D. *A Clinical Note Respecting Common Ailments.*
2. *Wickham, L. *Gonorrhea.*
3. Marshall, C. F. *Non-Specific Sores.*
4. Jellett, H. *Leucorrhea.*
5. Barker, A. E. *Varicose Veins.*
6. *Hall, F. de H. *Pleurisy.*
7. Rankin, G. *Pleurisy. Three Interesting Cases.*
8. Hood, D. W. C. *Insomnia.*
9. Tilley, H. *Hoarseness.*
10. Parker, C. A. *Tonsillitis.*
11. Williams, P. W. *Asthma.*
12. Roughton, E. W. *Nose Bleeding.*
13. Little, E. G. *Warts and Chilblains.*
14. Abraham, P. S. *Ringworm.*
15. Langwill, H. G. *Stammering.*
16. Bunch, J. L. *Nevi Treatment by Liquid Air and Solid Carbon Dioxide.*
17. Romer, F. *Certain Sprains.*

2. Wickham sums up his idea of the treatment of gonorrhea in men as follows: (1) Precise diagnosis of the nature of the lesions. (2) Knowledge of their local position. (3) Direct interference in the case of superficial lesions. (4) Mechanical action to reach even deep lesions and mechanical transport of medicinal particles.

6. Hall advises that all cases of pleurisy should be treated as if tuberculous. He goes into the details of treatment in the early acute stage of dry pleurisy, pleurisy with serous effusion and pleurisy with purulent effusion. [J. B. H.]

### Edinburgh Medical Journal.

October, 1910.

1. *Gibson, G. A. *The Relief of Cardiac Enlargement by Surgical Measures.*
2. Murrell, W. *Gonococcic Arthritis and Its Treatment.*
3. Russell, W. *A Working Plan of Clinical Medicine Teaching.*
4. *Wilkie, D. P. D. *Gastro-Jejunal and Jejunal Ulceration following Gastro-Enterostomy.*
5. Fordyce, A. D. *The Care of the Infant and Young Child (to Five Years) in Edinburgh.*

1. Gibson reports the details of an interesting case in which thoracotomy was done to relieve the heart with adhesive pericarditis. In this particular case only temporary benefit ensued.

4. Wilkie has made a study of peptic ulcer of the jejunum occurring as a sequel to gastro-jejunostomy. He recognizes two types, one gastro-jejunal, in which the ulceration occurs at the site of the anastomosis, and the other true jejunal ulceration, in which one or more ulcers form in the jejunum at some distance from the anastomotic opening; the former is more common. It may manifest itself at any period after the operation from a few weeks to several years; it is usually associated with a recurrence of the gastric symptoms. The tendency to perforation of such ulcers is greater than in the case of gastric ulcer. In all recorded cases the original operation was done for non-malignant affection of the stomach or duodenum. Such ulceration has been met with in every variety of gastro-enterostomy; in the majority of cases the preceding gastric lesion had been associated with hyperacidity; it is probably caused by the action of the acid gastric juice or the jejunal mucosa normally exposed to an alkaline medium. He gives the details of three cases in which this ulceration had occurred and presents experiments on hyperacidity and jejunal ulcer. The article is well illustrated with numerous plates. [J. B. H.]

### Quarterly Journal of Medicine. Vol. 4. No. 13.

October, 1910.

1. Gibson, A. G., Good, T. S., and Penny, R. G. *The Pulse immediately Preceding the Epileptic Attack.*
2. *Thursfield, H. *Influenzal Septicemia, with a Short Review of the Present Status of Bacillus Influenzæ.*
3. *Addis, T. *Hereditary Hemophilia: Deficiency in the Coagulability of the Blood the Only Immediate Cause of the Condition.*
4. Monro, T. K. *A Further Note on Hematoporphyrinuria not Due to Sulphonal.*
5. *Cowan, J., Kennedy, A. M., Paterson, A. R., and Teacher, J. H. *Two Cases of Acute Endocarditis.*
6. *Fowler, J. S., and Dickson, W. E. C. *Tuberous Sclerosis.*
7. *Cowan, J., and Ritchie, W. T. *Coupled Rhythms of the Heart.*
8. *White, W. H. *The Outlook of Sufferers from Exophthalmic Goiter.*

2. Thursfield relates two cases of influenzal septicemia; the first resembled clinically a severe attack of grippe, with a temperature chart resembling that of croupous pneumonia; the second started with symptoms of phlebitis of the leg, followed by fever, consolidation in the lung, and dry pericarditis. Both cases ended in recovery and Pfeiffer's bacillus was obtained in pure culture from the blood in both. Leucocytosis was absent. He then reviews the rôle played by the influenza bacillus in disease. On the basis of Cohen's three cases of septicemic meningitis he concludes that this form is due to a variety of the bacillus which is pathogenic for animals, but this is not invariably so, for in a case coming under the observation of the reviewer, the bacillus was without effect when inoculated into suitable animals.

3. This article is a report of the study of the coagulation time of the blood in twelve hemophiliacs. Addis found that the delay in the coagulation time of the blood, which is always to be found in this disease, is roughly proportional to the severity of the symptoms, in the severe cases being prolonged even up to eighty minutes. The addition of thrombokinase to hemophilic blood hastened the coagulation time, but large amounts were necessary to render it normal. With small amounts, which were sufficient to decrease notably the coagulation time in normal blood, the hemophilic blood was still very slow in clotting. The amount of negative pressure necessary to produce bruising with a dry cup was found to be the same in a hemophiliac as in a normal person, which shows that fragility of the capillaries cannot be assumed in hemophilia. In short, the delayed clotting which is always present in hemophilia is sufficient of itself to account for all the phenomena.

5. The authors found in a case of acute endocarditis with prolonged a–c interval an inflammatory lesion of the auriculo-ventricular bundle, in another case with very short

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a-c interval a similar lesion in the auriculo-ventricular node, without implication of the bundle.

6. Tuberous sclerosis is a rare developmental disease characterized by the presence of scattered hard nodules in the cerebral cortex, frequently associated with tumors in the heart, kidneys and skin. During life, epilepsy and imbecility are constant features. If, in addition to these, adenoma sebaceum is present, the diagnosis may be made *intra vitam*, otherwise not. The authors report one case and analyze the literature.

7. By coupled rhythm of the heart the authors mean that two beats are separated by a short pause, and the second beat is followed by a long pause. This is what most writers call bigeminy. Cowan and Ritchie describe the various forms of this condition, classifying it as follows: (1) Coupled rhythm of the ventricles, occurring at times in partial and complete heart-block in perpetual arrhythmia, and as a result of ventricular extrasystoles; (2) coupled rhythm of both auricles and ventricles. They illustrate these types by original tracings and discuss at length the various theories as to the method of production of the bigeminy.

8. White's statistical report of a large series of cases of Graves' disease merely shows that many such patients recover under medical treatment although in too poor condition to stand an operation. He considers that the most important feature in medical treatment is absolute rest in bed for weeks and months, with freedom from anxiety. [W. T.]

DEUTSCHE MEDIZINISCHE WOCHENSCHRIFT. No. 44.

Nov. 3, 1910.

1. ENDERLEN. *Diagnosis and Treatment of Goiter.*
2. FÜRBRINGER. *The Value of Quinquand Finger Crepitation Sign.*
3. *ZIELER, K. *Experiences with Ehrlich-Hata Preparation "606."*
4. *KOLL, E. *Prolonged Intravenous Adrenalin Infusion.*
5. NEUMANN, G. *Demonstration of Bacterium Coli in the Outer World, Especially on Nutrient Media.*
6. BRÜCKNER, G. *Dysentery Bacilli of Type Y in the Intestines and Liver of a Former Typhoid Bacillus Carrier.*
7. DEHMEL. *A Needle in the Duodenum removed through an Enterostomy.*
8. FROMMBERGER, E. *Symphysiotomy with the Aid of a Symphysis Clamp.*
9. OPPENHEIMER, E. H. *Monocle and Half-Spring Eyeglass.*
10. FALTA, M. *An Aseptic Eye Dropper Flask.*

3. Zieler adds his experience with some fifty cases of syphilis early and late treated by Ehrlich's new compound. He is strong in his praise of the new preparation. He mentions, however, that it is still too early to be sure of the end results, but for temporary results it is far superior to mercury. Possibly in the future it will be found necessary to combine the two.

4. Koll describes in detail a method which he has devised for the long-continued (several hours) intravenous injection of adrenalin. He has tried it on animals and finds that it is a valuable means of keeping up blood pressure. He thinks it is practical for clinical medicine and surgery. [C. F., JR.]

MÜNCHENER MEDIZINISCHE WOCHENSCHRIFT. No. 42.

OCT. 18, 1910.

1. *BRUNS, O. *Artificial Lowering of the Air Pressure in the Lungs by Means of Improving the Circulation.*
2. SCHULTZE, W. H. *The Oxydase Reaction on Pieces of Tissue.*
3. *ROTH, G. *Permanent Anesthesia of the Larynx in Tuberculosis by Infiltrating the N. Laryng. with Alcohol.*
4. *BECKHAUS, C. *Heart Disease from Trauma.*
5. GROSSMANN, K. *What Diseases of the Heart Contraindicate Ehrlich's "606"?*
6. DUHOT. *Technic and Dosage for Injecting Ehrlich's "606."*
7. TAEGE, K. *Observations on Syphilis treated with "606."*
8. EHLERS. *A Case of Death from "606."*
9. BLACKER, W. *Technic of Intravenous Injection for Infants.*
10. BARDACHZI, F. *Röntgen-Therapy of Myoma of the Uterus.*
11. PÜRKHAUER, R. *A Drawback of the Iodine Benzine Mode of Disinfection.*
12. *DIBBELT, W. *Disturbances of the Metabolism for Lime in Rachitis.* (Concluded.)

1. Bruns describes a simple apparatus for temporarily lowering the air pressure in the lungs. The essential parts of the apparatus are a pump and air tank to which a face mask is attached in such a way that the patient breathes in and out of the tank through the mask. The experiments seem to show that in this manner the suction of the great veins in the chest can be much increased, the diastole of the heart facilitated and the velocity of the circulation considerably increased. The method is recommended for cases in which cardiac embarrassment is due to improper functioning of the respiration, as in emphysema, kyphosis, and the like; and for cases of cardio-muscular weakness, as in obesity or anemia. The treatment may be given for about fifteen minutes at a time. It gives considerable relief and is liked by the patients. The contra-indications are the same as for other forms of physical therapy: severe decompensation, aneurysm, thrombosis and impending embolism, but it can safely be used in mild cardiac insufficiency.

3. Roth reaches the conclusion that, when the ordinary methods have failed, Hoffmann's method of injecting the N. laryng. sup. with alcohol is a safe and useful means of combating dysphagia resulting from tuberculosis of the larynx.

4. Having recently studied three cases of heart lesion following trauma, Beckhaus believes that it is more common than is generally supposed. He recommends after any severe accident, especially to the left side of the chest, that the heart be examined carefully, and that if cardiac symptoms should appear later, they be not hastily attributed to neurasthenia.

12. As a result of careful experimentation, Dibbelt has reached the conclusion that rachitis is a disturbance of the metabolism for calcium, that the excretion of calcium through the intestines is increased in rachitis, and that the bone changes are due to resorption. In explanation he offers the view that excessive excretion of calcium may be favored by food lying unabsorbed in the intestine as a result of illness in the child or artificial feeding of infants. [G. C. S.]

No. 43. OCT. 25, 1910.

1. v. HERFF, O. *Treatment of Dystocia from Narrow Pelvis.*
2. LÄWER AND SIEVERS. *Practical Use of Instrumental Respiration in Humans.*
3. ACHELIS, W. *Orthodiagraphic Demonstration of the Apex of the Heart.*
4. KRÖSING, E. *The Hot-Air Douche in Gynecology.*
5. WEINBRENNER, C. *Operative Treatment of Inflammation of the Adnexa.*
6. SCHWAB, M. *Use of Medicated Tampons in Gynecology.*
7. RITTER, H. *One Experience with Ehrlich's "606."*
8. LÖWENBERG, M. *X-Rays in the Treatment of Skin Diseases.*
9. BOHAC, C. *X-Ray Treatment of Scleroma.*
10. HAYMANN, H. *Pantopon in Psychiatry.*
11. GOLDSCHMIDT, A. *Medicinal Treatment of Bronchial Asthma.*
12. ENSLIN. *An Eye Symptom in the Left-handed.*
13. LUNKENBEIN. *A Rare Puncture Wound of the Stomach.*
14. STRAUSS, L. *A Peculiar Case of Fish Poisoning.*

BERLINER KLINISCHE WOCHENSCHRIFT. No. 45.

NOV. 7, 1910.

1. GOLDSCHEIDER. *Problems and Aims of Clinical Instruction.*
2. FRENKEL-HEIDEN. *The Application of "606" in Nervous Diseases.*
3. MÜNGER, A. *The Internal Secretion of the Generative Glands.* (To be continued.)
4. LEWY, F. H. *The Condition of the Muscles in Cerebral and Spinal Muscular Atrophy.*

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5. Kuttner, L., and Pulvermacher, G. *The Occurrence and the Diagnostic Importance of a Pepsin-Splitting Enzyme in the Stomach Contents.*
6. Carpi, N. *The Morphological Blood Changes in Struma and Basedow's Disease.*
7. Widerõe, S. *Examination of the Origin of Raised Body Temperatures.*
8. Ely, L. W. *Tuberculosis of the Knee-Joint in Adults, with a New Explanation and Operative Treatment.*
9. *Kaiser, O. *The Treatment of Prolapse by Means of the Pessary.*
10. Zypkin, S. M. *Acute Myeloid Leukemia. A Case of Green Coloration of the Bone Marrow.* (Concluded.)
11. Marx. *Child Murder.*

9. The author discusses the various kinds of pessary, their advantages and disadvantages. The Scheumann spherical pessary is of all the most satisfactory. Kaiser has also used this pessary to advantage in cases of sterility due to abnormalities in the shape of the vagina. He has had many cases of sterility cured by using the small-sized pessary of Scheumann for a few weeks followed by a few weeks' use of the next larger size until the normal shape of the vagina was attained. [J. L. H.]

Die Therapie der Gegenwart.

October, 1910.

1. *Umber, F. *Observations on the Pathology and Treatment of Duodenal Ulcer.*
2. Baginsky, A. *General Principles in the Treatment of the Infectious Diseases of Children.*
3. *Weiss, O. *The State of the Present Theory Concerning Asthma.*
4. Jacobsohn, L. *The Importance of the Suprarenal Preparations in Medical Practice.*

1. Umber believes that duodenal ulcer occurs a good deal more frequently than it is diagnosed. He emphasizes the following important diagnostic symptoms: (1) Pain in the right parasternal line in the gall-bladder region, coming on not more than three hours after the ingestion of food, sometimes relieved by taking more food. In one case the writer observed attacks of severe paroxysmal pain in the knees and elbows; the ulcer was situated on the posterior wall of the duodenum and had eroded the head of the pancreas. (2) A palpable resistance at the seat of pain. (3) Chilly feelings in the hands, feet and abdomen. (4) Blood in the stools, the patient having been on a meat-free diet for several days and gastric analysis being negative. Umber advises operation for duodenal ulcer only when there are such urgent indications as profuse bleeding or unbearable pain.

3. Weiss correlates his clinical experience with Brügelmann's theory of the causation of asthma. The essential factor in producing an attack is an irritation of the respiratory center. Such irritation may be traumatic, reflex or toxic. Grief or terror or any other severe "cerebral trauma" may precipitate a typical asthmatic seizure. Reflex irritation may come from any part; toxic irritation from disease or excess of $CO_2$. [L. D. C.]

Revue de Médecine.

October, 1910.

1. *Bernheim. *Venous Asystole in Hypertrophy of the Left Heart, due to Concomitant Stenosis of the Right Ventricle.*
2. *De Brun. *Studies on Paludal Infantilism.*
3. Stcherbach. *Litteral Psychomotor Hallucinations and Other Phenomena due to the Excitation of the Cortical Centers of Letters in Jacksonian Epilepsy.*

1. According to the observations of Bernheim upon ten cases with autopsy, the condition of right ventricular collapse is not rare. Hypertrophy or dilatation of the left heart is not often associated with a dilatation of the entire right heart, as has been formerly supposed. The hypertrophy of the interventricular septum and its convex bulging into the right ventricle, from dilatation, produces a stenosis of the lower half of that cavity. Above this point there is dilatation of the upper part of the ventricle and the right auricle, with all the signs of stasis of the great circulation. This phenomenon accounts for the frequency, in cardiac insufficiency, of congestion of the abdominal organs, ascites, etc., without evidence of the least interference with the lesser circulation — in the lungs.

2. De Brun reports forty cases of a peculiar type of infantilism, which he considers due to faulty metabolism, provoked by a chronic malarial infection. The subjects are short of stature, with thin extremities, small head and extremely infantile external genital organs. Pubic and axillary hair is generally wanting and the voice is shrill and high pitched. The author believes that this failure to develop, mentally as well as physically, is due to (1) absence of testicular or ovarian internal secretion; (2) sclerosis of the thyroid with consequent hypothyroidism; (3) atrophy of the pituitary gland and; (4) atrophy of the suprarenals. All the cases presented evidence of the first, while others showed during life or post-mortem characteristic malarial sclerosis of the thyroid. Isolated cases presented symptoms and signs similar to acromegaly and Addison's disease. It seems most reasonable that there should be some common etiological factor for so many very similar cases. [L. H. S.]

## Obituary.

### SAMUEL ALEXANDER, M.D.

Dr. Samuel Alexander, a prominent New York surgeon, died Nov. 29, at the New York Hospital, after an operation for appendicitis. He belonged to the well-known Alexander family of Princeton, N. J., and was fifty-one years of age. He was a graduate from Princeton University in 1879 and from Bellevue Hospital Medical College in 1882. He afterwards served as interne in Bellevue Hospital, and in 1887 became visiting surgeon to the hospital, a position which he retained up to the time of his death. He was also surgeon to the Montefiore Home and Hospital for Chronic Invalids. He was for some time a lecturer at the Bellevue Hospital Medical College, and in 1900 was appointed professor of clinical surgery, Department of Diseases of the Genito-Urinary System, in Cornell University.

There are but few men in the profession whose deaths could bring so deep a sense of loss to those of its members who knew him as that of Dr. Alexander.

His abundant vitality and enthusiasm, his keen and clear habit of thought and expression, his directness, his absolute honesty, the whole-hearted devotion to his work and the ardent energy with which he threw himself into it, inspired and stimulated all who came in contact with him. To the students whom he helped to equip for their careers, he imparted much of his own zeal and the desire to attain to the goals he placed before them; veterans felt their forces renewed and drew from his presence something of the sense of exuberant life which was never absent from him and which lent such warmth and color to all that he said and did.

More than any one of our number that we call to mind, he possessed the quality which, for lack of a better name, we term personal magnetism. He drew and held his pupils as a magnet draws and holds bits of steel, and his unconscious exercise of this power, applied as it always was to further scientific knowledge and to impart it to his scholars, to maintain and to promote the highest standards of professional work, exerted

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in these directions a potent and most valuable influence. Medical education in this country by his death is deprived of one of its most striking figures, and suffers a serious loss.

He was easily the most brilliant as well as one of the ablest of the group of men whose work lies in the special field of surgery to which he devoted himself. To many of the members of the Genito-Urinary Association the first thought when preparing to go to the annual meetings of the association to which he, and they, belonged was the pleasure of seeing him again, of listening to the sharp, terse, incisive sentences in which he put forward his views upon the various questions that were under discussion, and the certainty they felt of being filled with new enthusiasm and with the desire to strive to reach yet higher levels than those they had yet reached, which they knew would result from their contact with him.

He made many men his debtors in such ways as these, and as one of them, the writer desires to do homage to his memory.

## Correspondence.

### THE ADVISABILITY OF THE ESTABLISHMENT OF A STATE HOSPITAL FOR CASES OF NERVOUS BREAKDOWN.

BROOKLINE, MASS., Dec. 5, 1910.

*Mr. Editor:* In an article on page 822 of the JOURNAL of Nov. 24, 1910, under the heading, "Desirability of a State Psychopathic Hospital," I am misrepresented as remarking upon the "disadvantages" of a state psychopathic hospital at a recent hearing at the State House. As such an institution is now in process of construction, and as I, in common with other physicians, worked early and late to secure this admirable means for the early treatment of mental disease, the reporter's mistake is obvious.

The matter under consideration at the hearing was the advisability of the establishment of quite a different institution, namely, a sanitarium or hospital for cases of nervous breakdown and other nervous conditions not amounting to insanity. Of the great need of such a provision, there is no doubt in my mind. The principal question is whether the work should be entered upon under state or private auspices, a matter which is still *sub judice*. For some inexplicable reason my comment at the hearing on the various advantages and disadvantages of both plans was taken by the reporter to refer to a psychopathic hospital.

Very truly yours,
HENRY R. STEDMAN, M.D.

[The use of the adjective "psychopathic" in the title and in the first line of the piece of Miscellany on page 822 of the JOURNAL of Nov. 24 seems to have given rise to some confusion in the minds of some of our readers, and in so far was unfortunate. Such a misunderstanting of our statement on the part of these readers was not anticipated at the time the contribution was printed. — ED.]

### SOCIETY NOTICE.

THE NEW ENGLAND HOSPITAL MEDICAL SOCIETY. — This society will meet at the Kensington Chambers, corner Boylston and Exeter streets, Boston, Room 203, on Thursday, Dec. 15, at 7.30 P.M. Section of Obstetrics, Dr. Sarah R. Stowell, chairman. Subject: "The Progress in Obstetrics," Dr. Franklin S. Newell.

BLANCHE A. DENIG, M.D.,
*Secretary.*

### RECENT DEATHS.

DR. LANDON B. EDWARDS, who died at Richmond, Va., on Nov. 27, was born in 1845. He was a charter member of the Medical Society of Virginia, a founder of the Virginia Medical Monthly Journal and of the University College of Medicine in Richmond. He had practised in the latter city for many years.

DR. WILLIAM F. HUSSEY, who died of heart disease last week at Roslindale, was born in East Boston on June 29, 1881. He graduated from the Tufts Medical School in 1905, served a year in the Marine Hospital at Chelsea, Mass., and subsequently studied for a time in Vienna. He was a member of The Massachusetts and of the Norfolk County Medical Societies.

DR. HENRY HUTCHINSON, of St. Paul, Minn., who died of heart disease on Dec. 2, at Algiers, was born in Montreal, Canada, on Aug. 20, 1849. In 1874 he graduated from the Hahnemann Medical College at Philadelphia, and after practising four years in Northfield, Minn., settled in St. Paul. In 1894 he became a member of the Minnesota State Board of Health, and since 1901 had been its president. He was for a time professor of theory and practise in the College of Homeopathic Medicine and Surgery, University of Minnesota. He was a member of the American Health Association, of the Minnesota State Anti-Tuberculosis Association, and of the American and Minnesota Institutes of Homeopathy.

DR. FREDERICK D. MCNEAL, who died of pneumonia last week in Troy, Ohio, was born in 1840. He was at one time food and dairy commissioner of Ohio.

DR. CHARLES TESSIER, who died last week of cerebral hemorrhage at Haverhill, Mass., was born in Canada in 1853. He is survived by two daughters and by one son, also a physician.

DR. BENJAMIN WILLIAMS, of Rockland, Me., who died at Prospect Harbor, Me., on Nov. 27, was born in 1835. During the Civil War he served as assistant surgeon of the Eighth Maine Regiment.

DR. THOMAS GILL NOCK, a well-known physician and former mayor of Rome, N. Y., died on Nov. 28, in his fifty-second year. He was a native of Windsor, Conn., and was graduated from the College of Medicine, Syracuse University, in 1883. He had served as coroner of Oneida County and as a manager of the State Hospital for the Insane at Utica, and for the past six years was a member of the board of fire and police commissioners of Rome.

### RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, NOV. 19, 1910.

| CITIES. | Reported deaths in each. | Deaths under five years. | CITIES. | Reported deaths in each. | Deaths under five years. |
|---|---|---|---|---|---|
| New York | — | — | Waltham | 5 | 0 |
| Chicago | 632 | 159 | Pittsfield | 5 | — |
| Philadelphia | — | — | Brookline | 5 | — |
| St. Louis | — | — | Gloucester | 9 | 1 |
| Baltimore | — | — | North Adams | 8 | 1 |
| Cleveland | — | — | Northampton | 7 | 1 |
| Buffalo | — | — | Chicopee | 5 | 2 |
| Pittsburg | — | — | Medford | 3 | — |
| Cincinnati | — | — | Beverly | 4 | 1 |
| Milwaukee | — | — | Leominster | 3 | 1 |
| Washington | — | — | Hyde Park | 8 | 1 |
| Providence | — | — | Melrose | 1 | 0 |
| Boston | 211 | 49 | Newburyport | 5 | — |
| Worcester | 35 | 10 | Revere | 4 | 1 |
| Fall River | 34 | 11 | Westfield | 5 | 2 |
| Cambridge | 34 | 8 | Woburn | 2 | 1 |
| Lowell | 42 | 15 | Peabody | — | — |
| New Bedford | 24 | 11 | Marlboro | 2 | 0 |
| Lynn | 27 | 8 | Attleboro | 2 | 1 |
| Springfield | 26 | 5 | Adams | 3 | 1 |
| Lawrence | 25 | 10 | Clinton | 2 | 1 |
| Somerville | 22 | 4 | Gardner | 2 | 1 |
| Brockton | 8 | 2 | Milford | — | — |
| Holyoke | 15 | 10 | Watertown | 1 | 0 |
| Malden | 9 | 1 | Plymouth | — | — |
| Chelsea | 9 | — | Southbridge | 1 | — |
| Newton | 7 | 1 | Weymouth | 1 | — |
| Salem | 6 | 1 | Framingham | 3 | 1 |
| Haverhill | 12 | — | Wakefield | 2 | — |
| Fitchburg | — | — | Webster | 0 | — |
| Everett | 7 | 2 | Arlington | 1 | — |
| Quincy | — | — | Greenfield | 1 | — |
| Taunton | 17 | 4 | | | |

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# Tufts College Medical School

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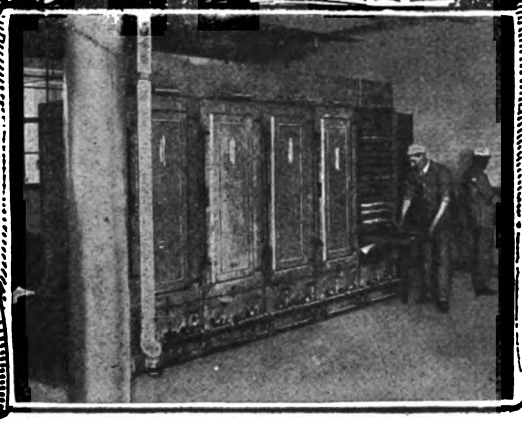

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*A Few Reviews of*

# Goldthwait, Painter & Osgood's Diseases of the Bones and Joints

have been published. They are unanimous in their statement that the book is of exceptional value, that it is original, and that the purpose of the authors plainly set forth has been well accomplished.

---

Although the authors in their preface disclaim any intention of writing a book on orthopedic surgery, this book is written with a remarkable breadth of view, and in a most scientific manner, and sums up well the modern knowledge on this branch of medicine. There is a marked absence of " canned material " from the book, which is most refreshing, the pathology is up to date and unusually good, and the differential diagnosis of the various diseases, except that of Potts' disease, is excellent. The chapter on osteomyelitis is far better than that on the same subject in most surgical textbooks, and those on tuberculosis of the smaller joints, the treatment of hip disease, and the technic of operations on tuberculous joints are all very well done, also that on pelvic articulations. The illustrations are numerous and clear, and made clearer by the notes that accompany them. It is evident throughout the book that the authors have studied their joints, and whenever it is possible they prove their case. The inclusion of a large number of histories is somewhat of a new departure. — *The Medical Record.*

---

The authors have entitled the book " Clinical Studies," perhaps to disabuse the minds of those who might expect a " textbook " along the old lines, and they offer these studies primarily " to those practitioners of medicine to whom sufferers from joint disease usually make their first appeal." This does not mean that the book is elementary in its scope. It represents, on the contrary, a large part of the experiences, deductions and also results of original investigations of three busy men handling annually a large amount of clinical material. But as the style of presentation is up to what we expect from Boston, this is a work which can be read from cover to cover by any medical man. * * *

As a whole, the volume stands as a contribution of science to humanity. Its pages not only show a spirit of aiding the cripple, but also breathe patriotic and humanitarian desires to help the nation and the race. It will awaken an interest in bone and joint diseases that, so far, has been dormant in many. It is another solar-plexus blow to the diagnosis " rheumatism." It should be read by every one who has treated, does now treat, or ever expects to treat, a case of bone and joint disease or disability. — *The Journal of the Minnesota State Medical Association.*

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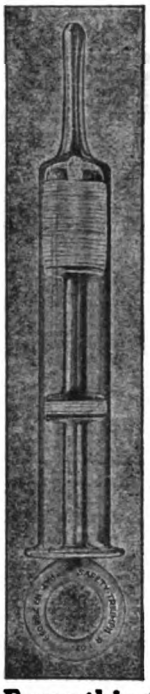

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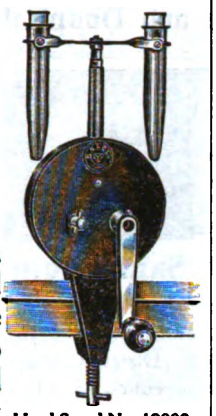

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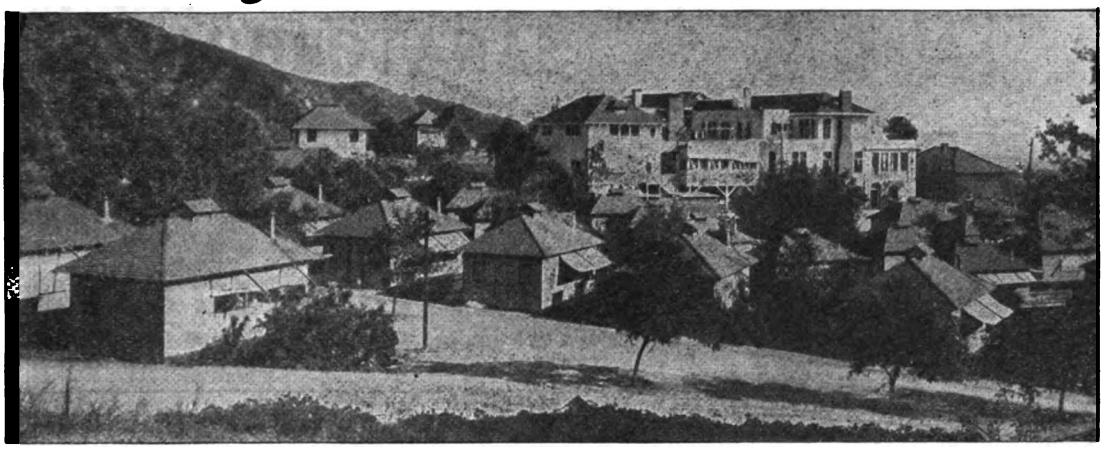

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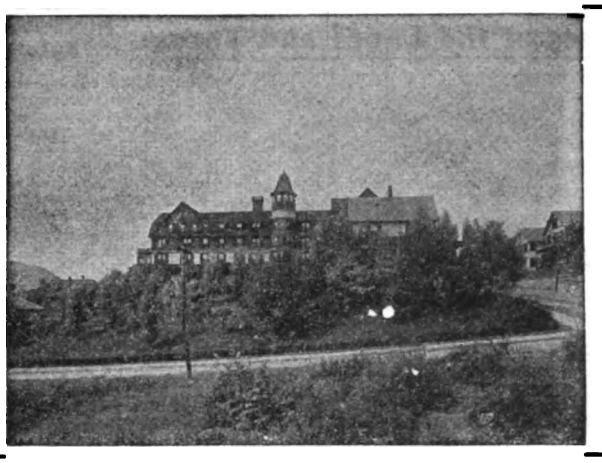

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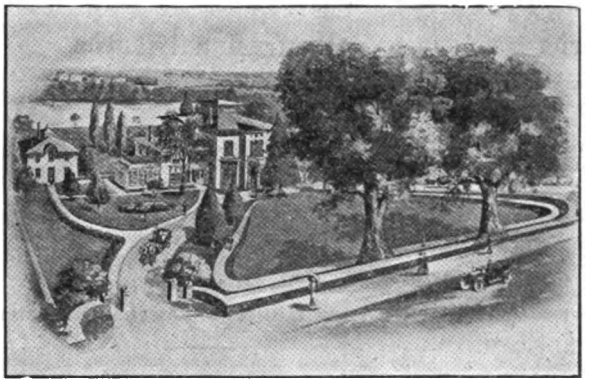

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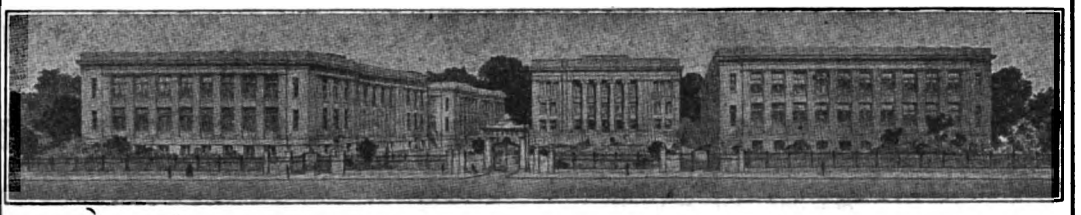

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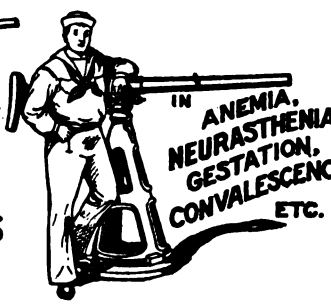


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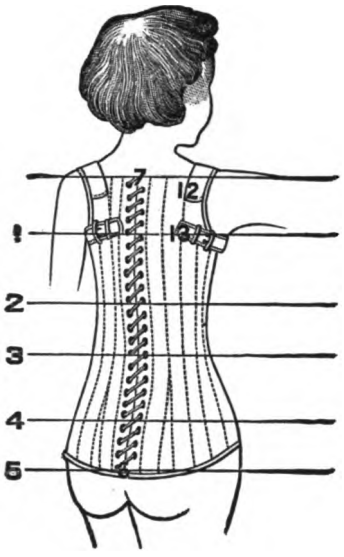


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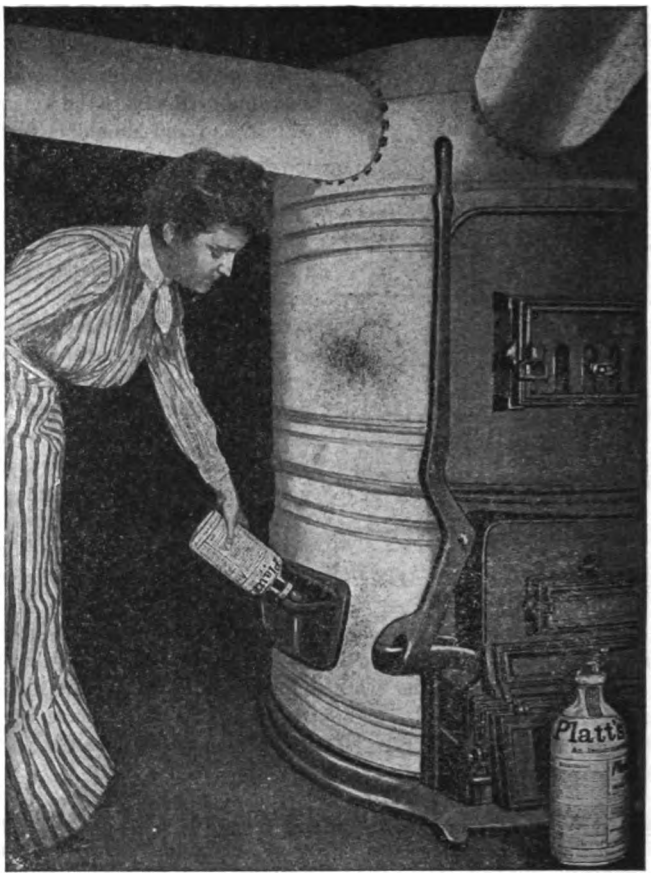


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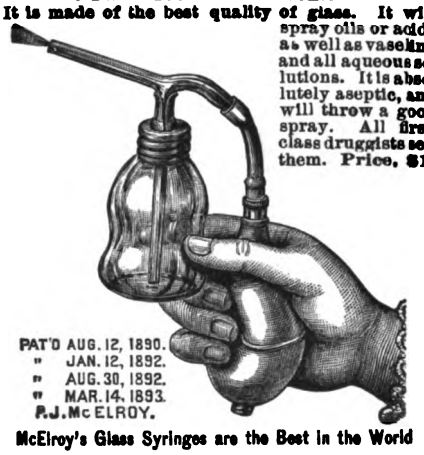


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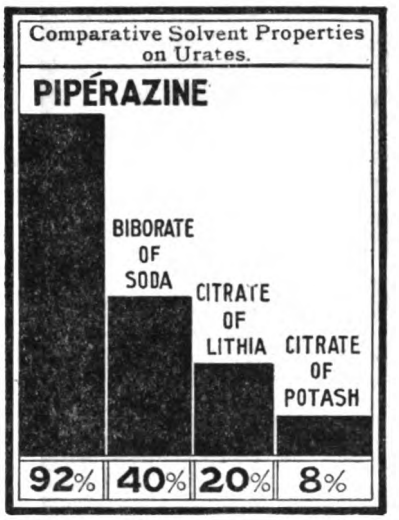


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have been published. They are unanimous in their statement that the book is of exceptional value, that it is original, and that the purpose of the authors plainly set forth has been well accomplished.

---

Although the authors in their preface disclaim any intention of writing a book on orthopedic surgery, this book is written with a remarkable breadth of view, and in a most scientific manner, and sums up well the modern knowledge on this branch of medicine. There is a marked absence of " canned material " from the book, which is most refreshing, the pathology is up to date and unusually good, and the differential diagnosis of the various diseases, except that of Pott's disease, is excellent. The chapter on osteomyelitis is far better than that on the same subject in most surgical textbooks, and those on tuberculosis of the smaller joints, the treatment of hip disease, and the technic of operations on tuberculous joints are all very well done, also that on pelvic articulations. The illustrations are numerous and clear, and made clearer by the notes that accompany them. It is evident throughout the book that the authors have studied their joints, and whenever it is possible they prove their case. The inclusion of a large number of histories is somewhat of a new departure. — *The Medical Record.*

---

The authors have entitled the book " Clinical Studies," perhaps to disabuse the minds of those who might expect a " textbook " along the old lines, and they offer these studies primarily " to those practitioners of medicine to whom sufferers from joint disease usually make their first appeal." This does not mean that the book is elementary in its scope. It represents, on the contrary, a large part of the experiences, deductions and also results of original investigations of three busy men handling annually a large amount of clinical material. But as the style of presentation is up to what we expect from Boston, this is a work which can be read from cover to cover by any medical man. * * *

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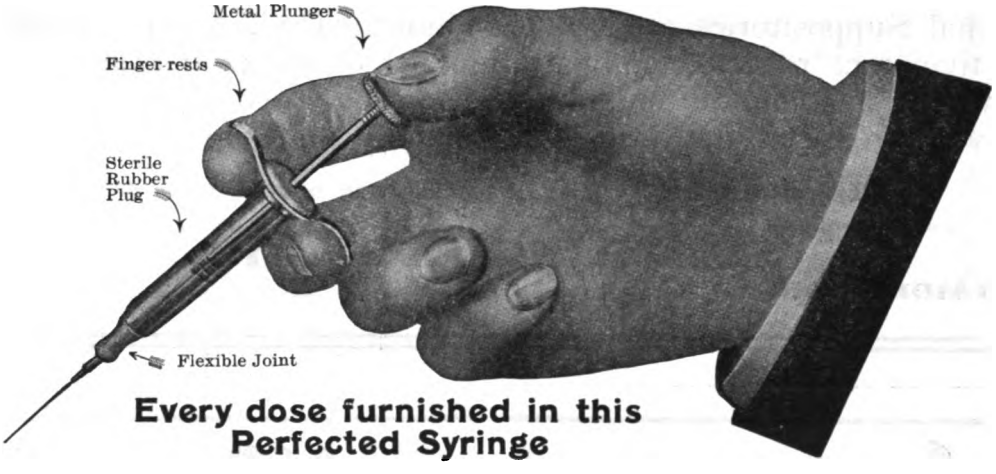


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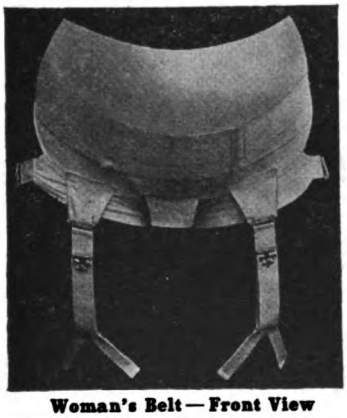

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## Address.

# PHYLOGENETIC ASSOCIATION IN RELATION TO CERTAIN MEDICAL PROBLEMS.*

BY G. W. CRILE, M.D., CLEVELAND, OHIO.

The discovery of the anesthetic properties of ether and its practical application to surgery must always stand as one of the great achievements of medicine. It is eminently fitting that the anniversary of that notable day, when the possibilities of ether were first made known to the world, should be celebrated within these walls, and whatever the topic of your Ether Day orator, he must fittingly first pause to pay tribute to that great event and to the master surgeons of the Massachusetts General Hospital. On this occasion, on behalf of the dumb animals as well as on behalf of suffering humanity, I express a deep sense of gratitude for the blessings of anesthesia. Two years ago an historical appreciation of the discovery of ether was here presented by Professor Welch, and last year an address on medical research was given by President Eliot. I, therefore, will not attempt a general address, but will present an experimental and clinical research.

Time will permit the presentation of only the summaries of the large amount of data. The great assistance rendered by my associates, Dr. D. H. Dolley, Dr. H. G. Sloan, Dr. J. B. Austin and Dr. M. L. Menten,[1] I acknowledge with gratitude.

The scope of the title of this paper may be explained by a concrete example.

When a barefoot boy steps on a sharp stone there is an immediate discharge of nervous energy in his effort at escape from the wounding stone. This is not a voluntary act. It is not due to his own personal experience (i. e., his ontogeny), but is due to the experience of his progenitors during the vast periods of time required for the evolution of the species to which he belongs, i. e., his phylogeny. The wounding stone made an impression upon the nerve receptors in the foot similar to the innumerable injuries which gave origin to this nerve mechanism itself during the boy's vast phylogenetic or ancestral experience. The stone supplied the phylogenetic association, and the appropriate discharge of nervous energy automatically followed. If the sole of the foot is repeatedly bruised or crushed by the stone, shock may be produced. If the stone be only lightly applied, then there is also a discharge of nervous energy from the sensation of tickling. The body has had implanted within it in a similar manner other mechanisms of ancestral or phylogenetic origin whose purpose is the discharge of nervous energy for the good of the individual. In this paper I shall discuss the origin and mode of action of some of these mechanisms including certain phases of anesthesia.

The word anesthesia — meaning *without feeling* — describes accurately the effect of ether in anesthetic dosage. Although no pain is felt in operations under inhalation anesthesia, the *nerve impulses set up* by a surgical operation still reach the brain. We know that not every portion of the brain is fully anesthetized, since surgical anesthesia does not kill. The question then is, What effect has trauma under surgical anesthesia upon the part of the brain *that remains awake?* If, in surgical anesthesia, the traumatic impulses cause an excitation of those wide-awake cells, are the remainder of the cells of the brain, despite anesthesia, influenced in any way? If influenced, they are prevented by the anesthesia from expressing the same in conscious perception or in muscular action. Whether the *anesthetized* cells are influenced or not must be determined by noting the physiologic function after anesthesia has worn off, and in animals by an examination of the brain cells as well. It has long been known that the vasomotor, the cardiac and the respiratory centers discharge energy in response to traumatic stimuli applied to various sensitive regions of the body during surgical anesthesia. If the trauma is sufficient, exhaustion of the entire brain is observed after the effect of the anesthetic is worn off; that is to say, despite the complete paralysis of voluntary motion and the loss of consciousness due to ether, the traumatic impulses that are known to reach the *awake* centers in the medulla also reach and influence every other part of the brain. As to whether or not the consequent functional depression and the morphologic alterations seen in the brain cells may be due to the low blood pressure which follows excessive trauma is answered by the following experiments, viz.: the circulation of animals was first rendered *static* by over-transfusion, and was controlled by a continuous blood-pressure record on a drum, the factor of anemia was thereby wholly excluded during the application of the trauma and during the removal of a specimen of brain tissue for histologic study. In every such instance morphologic changes in the cells of all parts of the brain were found, but it required more trauma to produce *equal* morphologic changes in animals protected against low blood pressure than in animals whose blood pressure gradually declined in the course of the experiments.

In the cortex and in the cerebellum, the changes in the brain cells were in every instance more marked than in the medulla. There is also strong *negative* evidence that traumatic impulses are not excluded by ether anesthesia from the part of the brain that is apparently asleep. This evidence is as follows:

If the factor of fear be excluded, and if in addition the traumatic impulses are prevented from reaching the brain by cocain blocking, then, despite the intensity or the duration of the trauma within the zone so blocked, there follows no exhaustion after the effect of the anesthetic disappears, and no morphologic changes are noted in the brain cells. A still further negative evidence that inhalation anesthesia offers little or no protection to the brain cells from trauma is derived

* Address delivered at the Massachusetts General Hospital on the sixty-fourth anniversary of Ether Day, Oct. 15, 1910.

[1] From the H. K. Cushing Laboratory of Experimental Medicine, Western Reserve University, Cleveland.

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from the following experiment: A dog whose spinal cord had been divided at the level of the first dorsal segment, and then kept in good condition for two months, showed a recovery of the spinal reflexes, such as the scratch reflex, etc. This animal is known as a "spinal" dog. Now, in this animal the abdomen and hind extremities have no direct nerve connection with the brain. In such a dog a continuous severe trauma of the abdominal viscera and of the hind extremities lasting four hours was accompanied by but slight change in either the circulation or in the respiration, and no microscopical alteration of the brain cells. Judging from a large number of experiments on *normal* dogs under ether, such an amount of trauma would have caused not only a complete physiologic exhaustion of the brain, but also morphologic alterations of all of the brain cells and physical destruction of many. We must, therefore, conclude that, although ether anesthesia produces unconsciousness, it *apparently protects none of the brain cells* against exhaustion from the trauma of surgical operations; ether is, so to speak, but a veneer. Under nitrous oxide anesthesia there is approximately only one fourth the exhaustion on equal trauma as under ether; either nitrous oxide protects or ether predisposes to exhaustion under trauma. With this as a point of departure we will inquire into the cause of this exhaustion of the brain cells.

### ON THE CAUSE OF THE EXHAUSTION OF THE BRAIN CELLS FROM TRAUMA OF VARIOUS PARTS OF THE BODY UNDER INHALATION ANESTHESIA.

Numerous experiments on animals upon the effect of ether anesthesia *per se*, i. e., ether anesthesia without trauma, showed that although certain changes were seen there was neither the characteristic physiologic exhaustion after the anesthesia had worn off nor were there seen the characteristic changes in the brain cells. Turning to trauma, in a study of the behavior of individuals as a whole under deep and under light anesthesia, we at once found the cue to the discharge of energy, — the consequent physiologic exhaustion and the morphologic changes in the brain cells.

If, in the course of abdominal operations, rough manipulation of the parietal peritoneum is made, there is frequently observed a marked increase in the respiratory rate and an increase in the expiratory force, even to the extent of an audible expiratory groan. Under light ether anesthesia severe manipulation of the peritoneum often causes such vigorous contractions of the abdominal muscles that the operator may be greatly hindered in his work.

Among the unconscious responses to trauma under ether anesthesia are purposeless moving, withdrawing of the injured part, and if the anesthesia is sufficiently light and the trauma sufficiently strong, there may be an effort directed toward escape from the injury. In injury under ether anesthesia every grade of response may be seen, from the slightest change in the respiration or in the blood pressure to a vigorous defensive struggle. As to the purpose of these subconscious movements in response to injury, there can be no doubt, — *they are efforts at escape from the injury.*

Can any one picture the actual result of a formidable abdominal operation extending over a period of half an hour or more in an unanesthetized human patient if extensive adhesions are broken up, or if a large tumor is dislodged from its bed? In such a case would not the nervous system discharge its energy to the utmost in efforts to escape from the injury, and would the patient not suffer complete exhaustion? If the traumata, under inhalation anesthesia, be sufficiently strong and repeated in sufficient numbers, the brain cells will finally be deprived of their dischargable nervous energy and become exhausted just as exhaustion follows a strenuous and too prolonged muscular exertion, for example, such as is seen in endurance tests. Whether the nerve energy of the brain is discharged by injury under anesthesia, or whether by ordinary muscular exertion, identical morphologic changes are seen in the nerve cells. In shock from injury, in exhaustion from overwork (Hodge and Dolley) and in exhaustion from pure fear, the general functional weakness is similar, — in each a certain length of time is required to effect recovery, and in each there are morphologic changes in the brain cells. It is quite clear that in each of these cases the altered function and form of the brain cells are due to an *excessive discharge of nervous energy*. This brings us to the next question, viz., what determines the discharge of energy from trauma with or without inhalation anesthesia?

### ON THE CAUSE OF THE DISCHARGE OF NERVOUS ENERGY FROM TRAUMA IN ANIMALS UNDER INHALATION ANESTHESIA AS WELL AS IN THE NORMAL STATE WITH SPECIAL REFERENCE TO MEDICAL PROBLEMS.

I looked into this problem from many viewpoints and there seemed to be no solution until it occurred to me to seek the explanation in certain of the postulates which make up the doctrine of evolution. I realize fully the difficulty and the danger in attempting to reach the generalization which I shall make later and in the hypothesis I shall propose. There is, of course, no direct final proof of the truth of even the doctrine of evolution. It is idle to consider any experimental research into the cause of phenomena that have by natural selection required millions of years to develop. Nature has made the experiments on a world-wide scale; the data are before us for interpretation. Darwin could do no more than collect all available facts and then frame an hypothesis that best harmonized the facts. Sherrington, that masterly physiologist, in his volume entitled "The Integrative Action of the Nervous System," shows clearly how the central nervous system was built up in the process of evolution. Sherrington has made free use of Darwin's doctrine in explaining physiologic functions, just as anato-

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mists have extensively utilized it in the explanation of the genesis of anatomical forms. I will assume, therefore, that the discharge of nervous energy is accomplished by the application of the law of inheritance and association, and that this hypothesis will explain many clinical phenomena. I shall present such evidence in favor of this hypothesis as time and my limitations will admit, after which I shall point out certain clinical facts that may be explained on this hypothesis.

According to the doctrine of evolution, every function owes its origin to natural selection in the struggle for existence. In the lower and simpler animal life, indeed, in our human progenitors as well, existence depended principally upon the success with which three great purposes were achieved, viz., (1) self-defense against or escape from enemies; (2) the acquisition of food; and (3) procreation; and these were virtually the only purposes for which nervous energy was discharged. In its last analysis in a biologic sense this statement holds for man of to-day. Disregarding for the present the expenditure of energy for procuring food and for procreation, we will consider the discharge of energy in self-preservation. The mechanisms for self-defense which we now possess were developed in the course of vast periods of time from the lowest forms through all the intermediary stages to our present estate. One would expect, therefore, that we are now in possession of mechanisms which still may discharge energy on adequate stimulation but are not suited to our present needs. We shall point out such examples. As Sherrington has stated, there is interposed between ourselves and the environment in which we are immersed, our skin, in which are implanted many receptors for receiving specific stimuli which are transmitted to the brain. When these stimuli reach the brain, there is a specific response principally in the form of muscular action. Now, each receptor can only be adequately stimulated by the particular factor or factors in the environment which created the necessity for the receptor in question. Thus there have arisen receptors for touch, for temperature, for pain, etc. The receptors for pain have been designated nociceptors (nocuous or harmful influences) by Sherrington.

On the basis of natural selection, only the regions of the body that have been during long periods of time exposed to injury could have developed noci-ceptors. On this ground the finger, because it is exposed, should have many noci-ceptors, while the brain, though the most important organ of the body, because it has been during a vast period of time protected by a skull, should have no noci-ceptors. Realizing that this point is a crucial one, Dr. Sloan and I made a series of careful experiments. The cerebral hemispheres of dogs were exposed by removal of the skull and dura under ether anesthesia and under local anesthesia. Then various portions of the hemispheres were slowly but completely destroyed by rubbing with a piece of gauze. In some instances the hemisphere was destroyed by burning. In no instance was there more than a slight response of the centers governing circulation and respiration, and there was no morphologic change noted in an histologic study of the brain cells of the uninjured hemisphere. The experiment was as completely negative as the experiments on the "spinal" dog. Clinically I have confirmed the experimental findings in the course of explorations for brain tumor with a probe in conscious patients. Such explorations elicited neither pain nor evidence of altered physiologic functions. The brain, therefore, contains no mechanism, — no noci-ceptors, — the direct stimulation of which could cause a discharge of nervous energy in a self-defensive action. That is to say, direct injury of the brain can cause no purposeful nerve muscular action, while direct injury of the finger does cause purposive nerve muscular action. In like manner, the deeper portions of the spinal region have been sheltered from trauma, and they too show but little power of causing a discharge of nervous energy on receiving trauma. The various tissues and organs of the body are differently endowed with injury receptors, or the nociceptors of Sherrington. The abdomen and chest when traumatized stand first in their facility for causing the discharge of nervous energy, i. e., *they stand first in shock production.* Then follow the extremities, the neck and the back. It is an interesting fact that *this* physical type or *that* physical type of trauma elicits different responses as to the discharge of energy. Because it is such a commonplace, one scarcely realizes the importance of the fact that clean-cut wounds with a razor-like knife cause the least reaction, while a tearing, crushing trauma causes the greatest response. It is a suggestive fact that the technic of the carnivora in fighting each other and in killing their prey is probably the most efficient shock-producing trauma known. *In the course of evolution this may well have been the predominating type of trauma to which our progenitors were subjected.* In one particular respect there is an analogy between the response to trauma of some of the parts of the body of the individuals of a species susceptible to shock and the response to trauma of certain of the great divisions of the animal kingdom. Natural selection has protected one great division, the crustacea, against its enemies with a protective armor — the turtle and the armadillo are examples; to another division — the birds — it has given a sharp eye and wings, — the wild goose is an example; to another it has given a diabolic odor for protection, — the skunk is an example. The turtle, protected by its armor, is in a very similar position with respect to its protection against trauma as the sheltered brain of man, and like the brain does not respond by an especially active self-protective nerve muscular response. The turtle merely withdraws its head and legs within the armored protection and is proverbially difficult to exhaust or to kill by trauma. The brain and other phylogenetically sheltered parts likewise cause no exhausting self-protective nerve muscular response. The skunk is quite effectively protected from violence by its peculiar odor. This is indicated not only by con-

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sidering the protective value of the odor, but also by the fact that the skunk has no efficient nerve muscular mechanism for escape or defense, and can neither run fast nor can it climb a tree. Moreover, in encounters it shows no fear and backs rather than runs. The armadillo rolls itself into a ball for defense. Therefore the turtle, the armadillo and the skunk should have fewer noci-ceptors than a dog or man and should show less response to trauma. On the evidence of two (an insufficient number) carefully conducted experiments on the skunk, and two on the armadillo, there was as compared with the dog, the opossum, the pig, the sheep and the rabbit very much less discharge of energy on severe and protracted trauma of the abdominal viscera. These subjects were indeed relatively difficult to exhaust by trauma. These experiments are too few to be conclusive but they are of some value and furnish an excellent lead. It seems more than a coincidence that fear, noci-ceptors and susceptibility to shock go hand in hand in these comparative observations.

The discharge of energy caused by an adequate mechanical stimulation of the noci-ceptors is best explained in accordance with the law of phylogeny and association. That is, injuries awaken such reflex actions as have by natural selection been developed for the purpose of self-protection. Adequate stimulation of the noci-ceptors for pain is not the only means of causing a discharge of nervous energy. Nervous energy may also be discharged by adequate stimulation of the various ticklish regions of the body. The entire skin surface of the body contains delicate ticklish receptors. These receptors are closely related to the noci-ceptors for pain, and their adequate stimulation by an insect-like touch causes a discharge of energy — a nerve muscular reaction — resembling that of brushing off insects. This reflex is similar to the scratch reflex elicited in the dog. This discharge of energy is almost wholly independent of the will and is a self-protective action in the same sense as is the response to pain stimuli. The ear in man and in animals is acutely ticklish, — the adequate stimulus being any foreign body, — especially a buzzing insect-like contact. The discharge of nervous energy in horses and in cattle on adequate stimulation of the ticklish receptors of the ear is so extraordinary that in the course of evolution it must have been of great importance to the safety of the animal. A similar ticklish zone guards the nasal chambers. The discharge of energy here takes such form as effectively to dislodge the foreign body. The larynx is exquisitely ticklish, and in response to adequate stimulus, energy is discharged in the production of a vigorous cough. The mouth and pharynx have active receptors which cause the rejection of nocuous substances. The conjunctival reflex, though not classed as ticklish, is a most efficient self-protective reflex. I assume that there is no doubt as to the meaning of the adequate stimuli and the nerve-muscular response of the various ticklish receptors of the surface of the skin, of the ear, the nose, and the eye, and the larynx. These mechanisms were developed by natural selection as protective measures against the intrusion of insects and foreign bodies into regions of great importance. The discharge of energy in these instances is in accordance with the law of inheritance and association. The other ticklish points which are capable of discharging vast amounts of energy are the lateral chest wall, the abdomen, the loins, the neck and the soles of the feet. The type of adequate stimuli of the soles of the feet, the distribution of the ticklish points upon them, and the associated response leave no doubt that these ticklish points were long ago established as a means of protection from injury. Under present conditions they are of little value to man.

The adequate stimulus for the ticklish points of the ribs, the loins, the abdomen and the neck is deep isolated pressure, probably the most adequate being that of a tooth-shaped body. The response to tickling in these regions is actively and obviously self-defensive. The horse discharges energy in the form of a kick; the dog wriggles and makes a counter-bite; the man makes efforts at defense and escape.

There is strong evidence that the deep ticklish points of the body were acquired through vast periods of fighting, with teeth and claws. Even puppies at play bite each other in their ticklish points and thus give a recapitulation of their ancestral battles and of the real battles to come. The mere fact that animals fight effectively in the dark and always according to the habit of their species supports the belief that the fighting of animals is not an intellectual but a reflex process. There is no book of rules governing the conduct of a fight between animals. The sequences of events follow each other with such kaleidoscopic rapidity that the process is but a series of automatic stimulations and physiologic reactions. Whatever the significance, it is certain that man did not come either accidentally or without purpose into possession of the deep ticklish regions of his chest and abdomen. Should any one doubt the vast power that adequate stimulation of these regions possess in causing the discharge of energy, let him be bound hand and foot and vigorously tickled for an hour. What would happen? He would be as completely exhausted as though he had experienced a major surgical operation or as if he had run a Marathon race.

A close analogy to the reflex process in the fighting of animals is shown in the rôle played by the sexual receptors in conjugation. Adequate stimulation of these two distinct groups of receptors, the noci and the sexual, cause specific behavior, — the one toward embrace, the other toward repulsion. Again, one of the most peremptory causes of the discharge of energy is that due to an attempt forcibly to obstruct the mouth and the nose, threatening asphyxia. Neither friend nor foe is trusted, and a desperate struggle for air ensues. It will be readily granted that the efforts to prevent suffocation were established for the purpose of self-preservation, but the discharge of nerve-muscular energy to this particular end is

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no more specific and no more shows adaptative qualities than do the preceding examples. Even the proposal to bind one down hand and foot excites resentment, a feeling of self-preservation. No patient views with equanimity the application of shackles preparatory to anesthesia for an operation.

We have now considered some of the causes of the discharge of nervous energy due to various types of harmful physical contact, and have suggested analogous though antithetical sexual receptors. The response to the adequate stimuli of each of the several receptors is a discharge of nerve muscular energy of a specific type: One type for the ear, one for the larynx, one for the pharynx, another for the nose, another for the eye, another for the deep ticklish points of the chest and the abdomen, quite another for the delicate tickling of the skin, and still another in response to sexual and to painful stimuli.

According to Sherrington, a given receptor has a low threshold for only one, its own — hence a specific stimulus and a high threshold for all others; that is, the doors that guard the nerve paths to the brain are opened only on receiving the proper password. According to Sherrington's law, the individual as a whole responds to but one stimulus at a time, that is, only one stimulus occupies the nerve paths which perform acts, i. e., the final common path. As soon as a stronger stimulus reaches the brain it dispossesses whatever other stimulus is then occupying the final common path, — the path of action. The various receptors have a definite order of precedence over each other (Sherrington). For example, the impulse from the delicate ticklish points of the skin whose adequate stimulus is an insect-like contact could not successfully compete for the final common path with the stimulus of a noci-ceptor. The stimulus of a fly on the nose would be at once superseded by the crushing of a finger. In quick succession do the various receptors (Sherrington) occupy the final common path, but each stimulus is for the time always the sole possessor, hence the nervous system is integrated (connected up) to act as a whole. Each individual at every moment of its life has a limited amount of dischargeable nervous energy. This energy is at the disposal of any stimulus that obtains possession of the final common path, i. e., the *performance of acts.* Each discharge of energy is subtracted from the sum total, and whether the subtractions are made by the excitation of noci-ceptors by trauma, by tickling, by fighting, by fear, by flight, or by the excitation of sexual receptors, singly or in combination, the sum total of expenditure of energy, if large enough, produces exhaustion. Apparently there is no distinction between that state of exhaustion which is due to the discharge of nervous energy in response to trauma and that due to other causes. The manner of the discharge of energy is specific for each type of stimulation. On this conception traumatic shock takes its place as a natural phenomenon and is divested of its mask of mystery.

### THE DISCHARGE OF ENERGY THROUGH STIMULATION OF THE DISTANCE RECEPTORS, OR THROUGH REPRESENTATION OF INJURY (PSYCHIC).

We will now turn from the discussion of the discharge of nervous energy by mechanical stimuli to the discharge of energy through mental perception. *Phylogenetic* association may arise through the distance receptors as well as through physical contact, viz., through sight, hearing, smell, or by a representation of physical experiences. The effect upon the organism of the representation of injury or of the perception of danger through the distance receptors is designated *fear.* Fear is as widely distributed in nature as is its cause, that is, fear is as widely distributed as injury. Animals under the stimulus of fear, according to W. T. Hornaday, not only may exhibit preternatural strength, but also show strategy of the highest order, a strategy not seen under a lesser stimulus. In some animals fear is so intense that it defeats escape; this is especially true in the case of birds in the presence of snakes. The power of flight has endowed the bird with an easy means of escape from snakes, especially when the encounter is in the tops of trees. Here the snake must move cautiously else he will lose his equilibrium. His method of attack is by stealth. When the snake has stalked its prey, the bird is often so overcome by fear that it cannot fly and so becomes an easy victim. The phenomena of fear are described by Darwin as follows:

"Fear is often preceded by astonishment and is so near akin to it that both lead to the senses of sight and hearing being instantly aroused. In both cases the eyes and mouth are widely opened and the eyebrows raised. The frightened man at first stands like a statue motionless and breathless, or crouches down as if instinctively to escape observation. The heart beats quickly and violently, so that it palpitates or knocks against the ribs. That the skin is much affected under the sense of fear, we see in the marvelous and inexplicable manner in which perspiration immediately exudes from it. This exudation is all the more remarkable as the surface is then cold, and hence the term, 'a cold sweat'; whereas the sudorific glands are properly excited into action when the surface is heated. The hairs also on the skin stand erect, and the superficial muscles shiver. In connection with the disturbed action of the heart, the breathing is hurried. The salivary glands act imperfectly; the mouth becomes dry and is often opened and shut. I have also noticed that under slight fear there is a strong tendency to yawn. One of the best-marked symptoms is the trembling of all the muscles of the body, and this is often first seen in the lips. From this cause, and from the dryness of the mouth, the voice becomes husky and indistinct, or altogether may fail. As fear increases into agony of terror, we behold, as under all violent emotions, diversified results. The heart beats wildly, or may fail to act, and faintness ensue; there is a death-like pallor; the breathing is labored; the wings of the nostrils

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are dilated; there is a gasping and convulsive motion of the lips, a tremor on the hollowed cheek, a gulping and catching of the throat; the uncovered and protruding eyeballs are fixed on the object of terror, or they may roll restlessly from side to side. The pupils are said to be enormously dilated. All the muscles of the body become rigid, or may be thrown into convulsive movements. The hands are alternately clenched and opened, often with a twitching movement. The arms may be protruded, as if they were to avert some dreadful danger, or may be thrown wildly over the head. In other cases there is a sudden and uncontrollable tendency to headlong flight; and so strong is this, that the boldest soldier may be seized with a sudden panic. As fear arises to an extreme pitch, the dreadful scream of terror is heard. Great beads of sweat stand on the skin. All the muscles of the body are relaxed. Utter prostration soon follows, and the mental powers fail. The intestines are affected. The sphincter muscles cease to act and no longer retain the contents of the body. Men during numberless generations have endeavored to escape from their enemies or danger by headlong flight, or by violently struggling with them; and such great exertions will have caused the heart to beat violently, the breathing to be hurried, and the chest to heave, and the nostrils to be dilated. As these exertions have often been prolonged to the last extremity, the final result will have been utter prostration, pallor, perspiration, trembling of all the muscles, or their complete relaxation. And now, whenever the emotion of fear is strongly felt, though it may not be from any exertion, the same results tend to reappear, through the force of inheritance and association." (*Darwin.*)

In an experimental research, we found evidence that the physiologic phenomena of *fear* have a physical basis. This evidence is morphologic alterations in the brain cells, similar to certain stages of surgical shock and in fatigue from muscular exertion. For the present we will assume that fear is a *representation* of trauma. Because fear was created by trauma, fear causes a discharge of the energy of the nervous system on the law of phylogenetic association. The almost universal fear of snakes, of blood and of death and dead bodies may have such a phylogenetic origin. It was previously stated that under the stimulus of fear animals show preternatural strength. An analysis of the phenomena of fear shows that, so far as can be determined, all of the functions of the body requiring the expenditure of energy and which are of no direct assistance in the effort toward self-preservation are suspended. Involuntary expenditure of muscular energy, such as in the chase, the suspension of other functions is by no means so complete. Fear, hence trauma, may, therefore, drain to the last dreg the dischargeable nervous energy; therefore, the greatest possible exhaustion may be produced by fear and trauma. This is a distinction between fear and desire.

There is a factor, however, that influences the discharge of energy which I must discuss briefly. I refer to summation.

SUMMATION.

In the discharge of energy, summation plays an important rôle. Summation is attained by the repetition of stimuli at such a rate that each succeeding stimulus is applied before the nerve cells have returned to the resting stage from the preceding stimulus. If drops of water fall upon the skin from a sufficient height to cause the slightest unpleasant sensation, and at such a rate that before the effect of the stimulus of one drop has passed another drop falls in precisely the same spot, there will be felt a gradually increasing painful sensation until it becomes unbearable. This is summation. When a patient requires for a long time frequent painful wound dressings, there is a gradual increase in the acuteness of the pain receptors. This is summation. In a larger sense the behavior of the entire individual gives considerable evidence of summation, e. g., in the training of athletes the rhythmic discharge of muscular energy at such intervals that the resting stage is not reached before a new exercise is given results in a gradual ascent in efficiency until the maximum is reached. This is summation, and summation plays a large rôle in the development of both normal and pathologic phenomena.

We have now pointed out the manner in which at least a part of nervous energy of man may be discharged. The integrative action of the nervous system and the discharge of nervous energy by phylogenetic association may be illustrated by the analogy of an electric automobile. The electric automobile is composed of three principal parts: the motor and the wheels (the muscular system and the skeleton); the cells of the battery containing stored electricity (brain cells, nervous energy); and the controller which is connected with the cells by wiring (the receptors and the nerve fibers); and an accelerator button for increasing the electrical discharge (thyroid gland [?] ). The machine is so constructed that it acts as a whole for the accomplishment of a single purpose. When the controller is adjusted for going ahead (adequate stimulus of a receptor), then the conducting paths (the final common path) for the accomplishment of that purpose are all open to the flow of the current from the battery, and the vehicle is integrated to go ahead. It spends its energy to that end and is closed to all other impulses. When the controller is set for reverse, the machine is by this adequate stimulus integrated to back, and the battery is closed to all other impulses. Whether integrated for going forward or backward, if the battery be discharged at a proper rate until exhausted, the cells, though possessing no more power (fatigue), have sustained no further impairment of their elements than that of normal wear and tear. Furthermore, they may be restored to normal activity by recharging (rest). If the vehicle be placed against a stone wall, and the controller be placed at top speed ahead (trauma and fear), and if the accelerator is on as well (thyroid secretion?), though the machine will not move, the battery will not

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only soon be exhausted, but the battery elements themselves will be seriously damaged (exhaustion, — surgical shock).

We have now presented some evidence that nervous energy is discharged by the adequate stimulation of one or more of the various receptors that have been developed in the course of evolution. In response to an adequate stimulus, the nervous system is integrated for the specific purpose of the stimulated receptor, and but one stimulus at a time has possession of the final common path, — the nerve mechanisms for action. The most numerous receptors are those for harmful contact. These are the noci-ceptors. The effect of the adequate stimulus of a noci-ceptor is like that of pressing an electric button that sets in motion great machinery.

With this conception, the human body is likened to a musical instrument, — an organ, the keyboard of which is composed of the various receptors upon which environment plays the many tunes of life; and written within ourselves in symbolic language is the history of our evolution. The skin may be the "Rosetta Stone" which furnishes the key.

### ANOCI-ASSOCIATION.

We are now prepared on the law of phylogenetic association to make a practical application of the principles of the discharge of nervous energy. In the case of a surgical operation, if fear be excluded and if the nerve paths between the field of operation and the brain be blocked with cocaine, there will be no discharge of energy due to the operation; hence, there can be no shock, no exhaustion. Under these conditions of operation the nervous system is protected against noci-association whether by noci-perception or by an adequate stimulation of noci-ceptors. The state of the patient in whom all noci-associations are excluded can be described only by coining a new word. That word is "*anoci-association.*"

The difference between anesthesia and anoci-association is that although *inhalation anesthesia* confers the beneficent loss of consciousness and freedom from pain, it does not prevent the nerve impulses from reaching and influencing the brain, and hence does not prevent surgical shock nor the train of later nervous impairments so well described by Mumford. *Anoci-association* excludes fear, pain, shock and post-operative neuroses. *Anoci-association* is accomplished by a combination of special management of patients (applied psychology), morphine, inhalation anesthesia and local anesthesia.

We have now presented in summary much of the mass of experimental and clinical evidence we have accumulated in support of our principal theme, viz., that the discharge of nervous energy is accomplished by the law of phylogenetic association. If this point seems to have been labored, it is because we expect to rear upon this foundation a clinical structure. How does this hypothesis apply to surgical operations?

### PREVENTION OF SHOCK BY THE APPLICATION OF THE PRINCIPLE OF ANOCI-ASSOCIATION.

Upon this hypothesis a new principle in operative surgery is founded, viz., operation during the state of *anoci-association.* Assuming there is no unfavorable effect of the anesthetic, and no hemorrhage, the nerve cells of the brain cannot be exhausted in the course of a surgical operation except by fear, or trauma, or by both. Fear may be excluded by narcotics and special consideration until the patient is rendered unconscious by inhalation anesthesia. Then in addition to inhalation anesthesia, blocking with cocaine the nerve paths between the brain and the field of operation will place the patient in the beneficent state of *anoci-association,* and at the completion of the operation the patient will be as free from shock as at the beginning. In so-called "fair risks" such precautions may not be necessary, but in cases handicapped by infections, by anemia, by previous shock and by Graves' disease, etc., anoci-association may become vitally important.

### GRAVES' DISEASE.

Applying the principle of the discharge of nervous energy by phylogenetic association, and on the additional hypothesis that in the discharge of nervous energy the thyroid gland is, through the nervous system, stimulated, we can explain many phenomena of Graves' disease and possibly supply some of the factors to explain both the genesis and the cure of the disease.

In the wild state of animal life in which only the fittest survive in the struggle for existence, every point of advantage may have selection value. An animal engaged in battle or in a desperate effort at escape will be able to give a better account of itself if it has some means of accelerating the discharge of energy, some influence like that of oil upon the kindling fire. There is evidence, though perhaps not conclusive, that such an influence is exerted by the thyroid gland. This evidence is as follows: In myxedema, a condition characterized by a lack of thyroid secretion, there is a dullness of reflexes, and of intellect, a lowered muscular power, and generally a sluggish discharge of energy. In Graves' disease there is an excessive production of thyroid secretion. In this disease the reflexes are greatly sharpened, energy is discharged with very greatly increased facility, and metabolism is at a maximum. The same holds true in the administration of thyroid extract in large doses in normal subjects. In the course of sexual activities there is an increased action of the thyroid as indicated by an increased size and vascularity of the thyroid. In fear and in injury in cases of Graves' disease the thyroid is probably stimulated to increased activity as indicated by the increased activity of the thyroid circulation, by an increase in the size of the gland, by presenting the histologic appearance of activity in the nucleus of the cells, and by an increase of the toxic symptoms. Finally, Asher has stated that electric stimulation of the nerve supply of the thyroid causes an increased secretion. The origin

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of many cases of Graves' disease is closely associated with some of the causes of the discharge of nervous energy, especially depressive influences, such as nervous shocks, worry and nervous strain, disappointment in love, business reverses, illness and death of relatives and friends. The association of activity of the thyroid with procreation is well known, hence the incidence of the double strain of overwork or of fear and the sexual evolution in maturing girls is obviously favorable to the development of Graves' disease. The presence of a colloid goiter is a suitable soil for the development of Graves' disease. I fully recognize the evidence that infection or auto-intoxication may be contributing factors and must be assigned their rôle.

I have never known a case of Graves' disease to develop from success or from happiness alone, nor from hard physical labor, unattended by strain, nor from the results of energy voluntarily discharged. Some cases seem to have had their origin in over-dosage of thyroid extract in too vigorous an attempt to cure a colloid goiter. In Graves' disease one of the most striking characteristics is the patient's loss of control and an increased susceptibility to stimuli, especially to trauma and to fear and to the administration of thyroid extract. It has been shown that the various causes of the discharge of nervous energy produce alterations in the nervous system and probably in the thyroid gland. This is especially true of the fear stimulus. This is clearly demonstrated in the brains of rabbits subjected to fear alone. Of special interest is the effect of daily fright. In this case the brain cells show a distinct change, although the animal is subjected to no fear for twenty-four hours before it is killed. Now, a great distinction between man and the lower animals is the greater control man has acquired over his actions. This quality of control, having been phylogenetically most recently acquired, is the most vulnerable to various *nocuous* influences. The result of a constant noci-integration may be a wearing out of the control cells of the brain. In Graves' disease there has been demonstrated in a typical case a marked morphologic change in the brain cells. As previously stated, the origin of many cases of Graves' disease is associated in a broad sense with some noci-influence. If this influence causes stimulation of both the brain and the thyroid, its excessive action may cause impairment of the brain and hyperplasia of the thyroid as well. As self-control is impaired, fear obtains ascendency and, *pari passu*, would stimulate the thyroid still more actively. Finally, the fear of the disease itself becomes a noci-stimulus. As the thyroid secretion causes an increase in the facility for the discharge of nervous energy, there is established a pathologic reciprocal interaction between the brain and the thyroid. The effect of the constantly recurring stimulus of the noci-influence is heightened by summation. This reciprocal goading may continue until either the brain or the thyroid is destroyed. If the original noci-stimulus is withdrawn before the fear of the disease becomes too strong, and before too much injury to the brain and the thyroid has been inflicted, a spontaneous cure may result. Cure may be greatly facilitated by a complete rest cure. A cure implies the return of the brain cells to their normal state, with the re-establishment of the normal self-control, and the restoration of the thyroid to its normal state. Then the impulses of daily life will once more have possession of the final common path and the noci-influence be dispossessed. The discovery of the real cause of a given case of Graves' disease is frequently difficult because the exciting cause may be personal and is painful. Of extreme interest is the fact that the patient in the acute stage may be unable to refer to the real cause without exhibiting an exacerbation of the symptoms of the disease. I presume no case should be regarded as cured until reference can be made to the cause without an abnormal reaction. It has been established that in Graves' disease injury to any part of the body even under inhalation anesthesia causes an exacerbation of the disease. Fear alone may cause an acute exacerbation. These acute exacerbations are frequently designated "hyperthyroidism" and are the special hazard of operation.

In operating on subjects of Graves' disease on the principle of anoci-association, there is scarcely a change in the pulse, in the respiration or in the nervous state at the close of the operation. Against the effect of the inflowing stimuli from the wound after the cocaine has worn off I know no remedy. It is necessary, therefore, in the serious cases not to venture too far. Since the adoption of this new method (anoci-association) my operative results have been so vastly improved that I now regard no case of Graves' disease as inoperable, at least to the extent of making a double ligation.

If we believe that a continuous stimulation of both the brain and the thyroid gland, on the law of phylogenetic association, accelerated by summation, plays a rôle in the establishment of the pathologic interaction seen in Graves' disease, then it is but the next step to assume that if the nerve connection between the brain and the thyroid is severed, or if the lobe is excised and the patient is reinforced by a sojourn in a sanatorium, or some environment free from former noci-association, the patient will, providing the brain cells, the heart or other essential organs have not suffered irreparable damage, be restored to normal health. There are still many missing links, and the foregoing is not offered as a final solution, although many of the phenomena from the viewpoint of the surgeon are explicable.

### SEXUAL NEURASTHENIA.

The state of sexual neurasthenia is in many respects analogous to that of Graves' disease. In the sexual reflexes summation leads to hyper-excitability to psychic and mechanical stimuli of a specific type analogous to the hyper-excitability in Graves' disease to trauma and fear; both are based on the law of the discharge of energy by phylogenetic association and summation. It

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would be interesting to observe the effect of interrupting the nerve impulses from the field of the sexual receptors by injections of alcohol or other agencies and thus exclude the associational stimuli until the nervous mechanism has again become restored to the normal.

INTERPRETATION OF SOME OF THE PHENOMENA OF CERTAIN DISEASES OF THE ABDOMEN ON THE HYPOTHESIS OF PHYLOGENETIC ASSOCIATION.

On the law of phylogenetic association, it is probable that many of the phenomena of certain lesions in the abdominal cavity become explicable. The noci-ceptors in the abdomen, like noci-ceptors elsewhere, have been established by some kind of injury to which this region has been frequently exposed over vast periods of time. On this premise, we could at once predict that there are no noci-ceptors for heat within the abdomen because during countless years the intra-abdominal region has not come in contact with heat. That this inference is correct is shown by the fact that the application of a thermocautery to the intestines when completing a colostomy in a conscious patient is absolutely painless. One could also predict the fact that there are no touch receptors in the abdominal viscera, hence no sense of touch in the peritoneum. Just as the larynx, the ear, the nose, the sole of the foot and the skin have all developed the specific type of noci-ceptors which are adapted for their specific protective purposes, and when adequately stimulated respond in a specific manner on the law of phylogenetic association, so the abdominal viscera have developed equally specific noci-ceptors as a protection against specific nocuous influences. The principal harmful influences to which the abdominal viscera may have been long exposed are deep tearing injuries by teeth and claws in the course of the innumerable struggles of our progenitors with each other and with their enemies; the perforation of the intestinal tract from ulcers, injuries, appendicitis, gallstones, etc., causing peritonitis; and over-distention of the hollow viscera from various forms of obstruction. Whatever may be the connection, it is a fact that the type of trauma from fighting corresponds nicely to that which in the experimental laboratory causes the most shock. Division of the intestines with a sharp knife causes no pain, but pulling on the mesentery elicits pain. Likewise, ligature of the stump of the appendix causes sharp cramp-like pains. Sharp division of the gall bladder causes no pain, but distention, which is the gall bladder's most common pathologic state, produces pain. Distention of the intestine causes great pain, but sharp cutting or burning causes none. In the abdominal viscera, like the superficial parts, noci-ceptors have been presumedly developed by specific harmful influences, and each noci-ceptor is open to stimulation only by the particular type that produced it.

As we have just stated, pain is associated with the excitation of noci-ceptors, and these may take precedence over and dispossess the routine functions, such as peristalsis, secretion and absorption, of their occupancy of their respective nervous mechanisms, just as fear does. Hence, the loss of weight, the lassitude, the indigestion, the constipation and the many alterations in the function of the various glands and organs of the digestive system in chronic appendicitis, chronic gall-bladder disease, may be explained. This hypothesis readily explains the extraordinary improvement in the digestive functions and the general health following the removal of an appendix so slightly altered physically that only the clinical results in many cases could persuade one that this change could be an adequate cause for such far-reaching and important symptoms. It would equally explain certain gall-bladder phenomena — the indigestion, loss of weight, disturbed functions, etc. This hypothesis may supply the explanation of the disturbance from an active anal fissure, which is a potent noci-associator, and the consequent disproportionate relief after the trivial operation for its cure. Noci-association would well explain the great functional disturbances of the viscera immediately following abdominal operations.

Post-operative and traumatic neuroses are at once explained on the ground of noci-association, with the resulting strain upon the brain cells, causing in them physical lesions. If one were placed against a wall and were looking into the gun muzzles of a squad of soldiers and were told that he must not be afraid because in nine chances out of ten he would not be killed outright when the volley was fired, would it help him to be told that he must not be afraid? Such an experience would be written indelibly on his brain. Yet this is much the same position in which some surgical patients are placed. In railway wrecks we can readily understand the striking difference between the conscious passenger and the sleeping or drunken one. In the latter persons the noci-perceptors and receptors were not aroused, hence their immunity. In the functional disturbances of the pelvic organs association and summation may play a large rôle. On this hypothesis many cases of neurasthenia may well be explained. In the behavior of the individual as a whole summation may well be a scientific expression for "nagging." Many other pathologic phenomena may be explained in a similar manner. Thus we can better understand the variation of a gastric analysis in a timid patient alarmed over his condition and afraid of the hospital. He is integrated by fear, and fear taking precedence over all other impulses, no organ functionates normally. On the same ground, one sees animals in captivity pine away under the dominance of fear. The exposure of a sensitive brain to the naked possibility of death from a surgical operation is equal to uncovering a photographic plate in the bright sunlight to inspect it before putting it in the camera. This principle explains, too, the physical influence of the physician or surgeon who, by his *personality*, inspires, like a Kocher, absolute confidence in his patient. The brain through its power of phylogenetic association controls many processes that

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have wholly escaped from the notice of the "practical man." It is on the law of association that a flower, a word, a touch, a cool breeze, or even the thought of a fishing rod or of a gun, are helpful. On the contrary, any fragment of associational evidence of despair or misfortune, whether it be the corrugated brow, the gloomy silence of despair, a doubtful word, is equally depressing, and so could one add indefinitely to the symbolism that governs our daily lives. Thus, we see that through the law of inheritance and noci-association, we are able to read into the behavior of various diseases a new meaning.

OBSERVATIONS ON PATIENTS WHOSE ASSOCIATIONAL CENTERS ARE DULLED, AND ON DISEASES AND INJURIES OF REGIONS NOT ENDOWED WITH NOCI-CEPTORS.

Reversing the order, let us glance at the patient who is unconscious and who, therefore, has lost much of the power of association. His mouth is usually dry, the digestive processes are at a low ebb, the aroma of food causes no secretion of saliva. Tickling the nose causes no sneezing; he catches no cold. The laryngeal reflex is lost and food may be quietly inhaled. The entire process of metabolism is low. The contrast between man with associational centers keen and man with these centers dulled or lost is the contrast between life and death. On the behavior of the individual without associational power much might be said.

On the laws of adaptation through natural selection, phylogeny and association, one should expect no pain in abscess of the brain, in abscess of the liver, in pylephlebitis, in infection of the hepatic vessels, in endocarditis. This law explains why there are no noci-ceptors for cancer, and active noci-ceptors for the acute infections, because against cancer nature has no helpful response to offer and in certain of the acute pyogenic infections the noci-ceptors give the beneficent physiologic rest.

Could we dispossess ourselves of the shackles of psychology, and forget its confusing nomenclature, and view the human brain, as Sherrington has said, "as the organ of, and for, the adaptation of nervous reaction," many clinical phenomena would appear in a clearer light.

NATURAL SELECTION AND CHEMICAL NOCI-ASSOCITION IN THE INFECTIONS.

Heretofore we have considered the behavior of the individual as a whole in response to a certain type of noci-influences. We have been thinking in terms of physical escape from *gross* physical dangers, or grappling with *gross nerve-muscular* enemies of the same or of other species, as related to some problems in medicine. To explain these phenomena we have invoked the aid of the laws of natural selection and phylogenetic association. If our conclusions are correct, then it should follow that in the same laws we can find the explanation of immunity, which, of course, means a defensive response to our *microscopic* enemies. There should be no more difficulty in building up by natural selection an efficient army of phagocytes, or specific chemical reactions against *microscopic enemies*, than the building up of the various noci-ceptors for our muscular defense against our *gross enemies*. That immunity is a chemical reaction is no hindrance to the application of the law of natural selection nor of association. What essential difference is there between the chemical defense of the skunk against its *nerve-muscular* enemies and its chemical defense (immunity) against *its microscopic enemies?*

The administration of vaccines becomes the adequate stimuli by phylogenetic association of a chemical nature whereby immune bodies are produced.

While mentioning this subject I will only raise the question whether or not the specific character of the inaugural symptoms of some infectious diseases may not be due to phylogenetic association. These inaugural symptoms are measurably a recapitulation of the leading phenomena of the disease in its completed clinical picture. Thus the furious immediate phenomena of pneumonia, of peritonitis, of erysipelas, of the exanthemata, show phenomena of exaggeration which are analogous to the phenomena of physical injury and of fear of physical violence. Just as the acute phenomena of fear or the adequate stimulus of noci-ceptors are a recapitulation of phylogenetic struggles, so may the inaugural symptoms of infections be a similar phylogenetic recapitulation of the course of the disease. A certain amount of negative evidence is supplied by the difference between the response of a dose of toxins as compared with a dose of a standard drug. No drug in therapeutic dosage except the iodine compounds causes a febrile response; no drug causes a chill; all specific toxins cause febrile responses, and many cause chills. If a species of animal had been poisoned by a drug over vast periods of time, and if natural selection had successfully established a self-defensive response, then the administration of that drug would cause the noci-association (chemical), and a specific reaction analogous to that following Coley's toxins might be expected. Bacterial noci-association probably operates through the same law as the physical contact of environment does. But natural selection is impartial. It must be supposed that it acts upon the microscopic invader just as well as upon the host. On this ground one would infer that the bacteria of acute infections must have met by natural selection each advance of the immunity of the host by the same law of natural selection. Hence, the fast and furious struggle between man and his microscopic enemies merely indicates to what extent natural selection has developed the *attack* and the *defense* respectively. This is analogous to the quick and decisive battles of the carnivora when fighting among themselves or when contending against their ancient enemies. But when phylogenetically strange animals meet each other, they do not understand how to conduct a fight. Natural selection has not had the opportunity of teaching them. The acute infections have the characteristics of being ancient enemies. On this hypothesis one might under-

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stand the high mortality of measles when introduced into a new country. The infecting agency of measles by natural selection has become a powerful enemy of the human race, but the particular race to whom this infection is newly introduced has not had the equal advantage of building up its defense by the same law — natural selection. The variation in the effect of auto- and iso-pollution of water may be explained in a similar manner. Immunity and food assimilation are, therefore, on equal footing. May not the phenomena of anaphylaxis be studied on associational lines? Then, too, there may be chemical noci-associations of enemies now extinct, which like the ticklish points may still be active on adequate stimulation. This brief reference to the possible relation of the phenomena of the acute infections to the laws of natural selection and specific chemical noci-association has been made as a suggestion. Since the doctrine of evolution is all or nothing, I have included many phenomena to see how reasonable or unreasonable such an explanation might be.

### RECAPITULATION.

The following are the principal points presented: In operations under inhalation anesthesia the nerve impulses from the trauma reach every part of the brain, — the cerebrum that is apparently anesthetized as well as the medulla that is known to remain awake, the proof being the *physiologic* exhaustion of and the *pathologic* change in the nerve cells. Under ether anesthesia the damage is at least four times greater than under nitrous oxide. Inhalation anesthesia is, therefore, but a veneer, a mask that "covers the deep suffering of the patient." The cause of the exhaustion of the brain is the discharge of nervous energy in a futile effort to energize the paralyzed muscles in an effort at escape from the injury just as if no anesthetic had been given. The exhaustion is, therefore, of the same nature as that from overexertion.

But if the nerve paths connecting the field of operation and the brain be blocked, then there is no discharge of nervous energy from the trauma, and consequently no exhaustion however severe or prolonged the operation.

Fear is a factor in many injuries and operations. The phenomena of fear probably are exhibited only by animals whose natural defense is nerve-muscular. The skunk, the porcupine, the turtle, have little or no fear. Fear is born of the innumerable injuries in the course of evolution. Fear, like trauma, may cause physiologic exhaustion of and morphologic changes in the brain cells. The representation of injury, which is fear, being elicited by phylogenetic association, may be prevented by the exclusion of the noci-association or by the administration of drugs like morphine and scopolamine, which so impair the associational function of the brain cells that immunity to fear is established. Animals whose natural defense is muscular exertion, among which is man, may have their dischargeable nervous energy used up by fear alone, by trauma alone, but most effectively by the combination of both. What is the mechanism of this discharge of energy? It is the adequate stimulus of the noci-ceptors — the electric buttons — and the physiologic response for the purpose of self-preservation. According to Sherrington, the nervous system responds in action as a whole and to but one stimulus at a time. The integration of the individual as a whole occurs not alone in injury and fear, but also, though not so strong, under other phylogenetic associations, such as the chase and procreation. When adequate stimuli are repeated in such a rhythm that the new stimulus is received before the effect of the previous one has worn off, a higher maximum is reached than is possible under a single stimulus, however powerful.

Sexual receptors are implanted into the body by natural selection, and the adequate stimuli excite the nerve muscular reactions of conjugation in a manner analogous to the action of the adequate stimulus of the noci-ceptors. The specific response of either the sexual receptors or the noci-ceptors is at the expense of the total amount of nervous energy available at the moment. Likewise, daily labor, which, in the language of evolution, is the chase, expends nervous energy. However, under the dominance of fear or injury the integration is most nearly absolute and probably every expenditure of nervous energy not required for efforts at self-preservation is arrested; hence fear and injury drain the cup to the dregs. This is the potential difference between fear and desire, between injury and conjugation.

What is the practical application of this? In operative surgery there is introduced a new principle, which removes from surgery much of the immediate risk from its trauma by establishing *anoci-association;* it places on a physical basis certain of the phenomena of fear; it explains to us the physical basis for the impairment of the entire individual under worry or misfortune; the daily noci-associations of the individual as a social unit; or a noci-influence of a part of the body. On the other hand, it explains the power of therapeutic suggestion and other influences which serve for the time to change the noci-integration, the physical basis for the difference between hobe and despair; it explains some of the phenomena of Graves' disease, of sexual neurasthenia, possiply of hay fever and the genesis of the common cold. The principle is probably equally applicable to the acute infections whose chemical noci-association gives rise to many of the phenomena of the disease and explains their cure by natural immunity and by vaccines; it should teach us to view our patients as a whole; and especially should it teach the surgeon gentleness. It should teach us that there is something more in surgery than mechanics; and something more in medicine than physical diagnosis and drugs.

### CONCLUSION.

The brain cells have existed during eons of time and amid the vicissitudes of change with perhaps less alteration than the crust of the earth. Whether lodged in man or in the lower animals,

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they are related to and obey the same general biological laws, thus binding them, that is, ourselves, to the entire past and perform their function on the law of phylogenetic association.

So long have we directed our attention upon tumors, infections and injuries that we have not sufficiently considered the vital force itself. We have viewed each anatomical and pathologic part as an entity, and man as an isolated phenomenon in nature. May we not find in the law of adaptation under natural selection, and the law of phylogenetic association, the master key that will open to us the explanation of many of the pathologic phenomena as they have already explained many normal phenomena?

And may medicine not correlate the pathologic phenomena of the sick man with the forces of evolution, as the naturalists have correlated the phenomena of the sound man, — and disease as well as health be given its evolutionary setting?

## Original Articles.

### THE TUBERCULOSIS PROBLEM AS APPLIED TO CHILDREN.*

BY JOHN B. HAWES, 2D, M.D., BOSTON.

THE subject of tuberculosis is such a large one and a campaign against it involves so many important undertakings that a given community, city, state or country must devote its energies to one or two vital issues and put off until later others of nearly equal importance. In this state, for instance, a sanatorium for early cases seemed to be of first importance; next, as it became evident that in order to check the disease consumptives must be taken away from the homes of the population until they are cured or until they have learned how to live at home, the three new sanatoria at North Reading, Lakeville and Westfield were built. These sanatoria are primarily for adult consumptives; they have as yet no suitable provision for children.

The state has not forgotten, but none the less has scarcely yet touched upon, the question of tuberculosis as it occurs in children. In Europe, especially in France, the reverse is the case. There, most attention has been given to the care and education of tuberculous children. The state of Massachusetts already has more beds for its adult consumptives in proportion to its population than any other. It is rapidly realizing, and I might say already realizes, that the next step must be to make proper provision for tuberculous children, or, of infinitely more importance, to educate and care for them so that they do not become tuberculous. In certain respects this is a far easier task than that of caring for adult consumptives. Any one who has had practical experience in this matter recognizes only too well the almost hopeless task of trying to train and educate in the rules of hygiene and right living ignorant, stupid people from the slums of our cities, especially if they cannot even speak or understand the English language. Children, however, are easily trained and can just as well be taught right ways of living in the school as to learn wrong ways at home.

The objection may be raised that open pulmonary tuberculosis is comparatively rare among children. While it is true that the number of children with active open pulmonary tuberculosis is small, the number of ill-nourished and anemic children who will become tuberculous unless they are taught how to live is very great. It has become a habit to call such children "pre-tuberculous." This word, now so much in use, is a somewhat unfortunate one. We are most of us tuberculous, or at least 60 to 90% of us are. Practically every one of us has somewhere a focus of tuberculosis, happily latent, taken into the body in the early days of childhood. Thus, strictly speaking, only children in the first or second year of life may be said to be "pre-tuberculous." A more correct form would be "pre-phthisical" or "pre-consumptive." What the word really means is simply that any child who is weak, anemic or run down from any cause stands a very good chance of either having his own latent focus of tuberculosis break out and become active, or of becoming the abiding place of some wandering tubercle bacilli.

Of the total number of consumptives, those cases which occur in children probably do not amount to more than 1%. This, at least, has been my experience in looking over the applications for admission to our state sanatoria during the past year. The number of children attending our public schools, however, who are in the so-called "pre-tuberculous" stage has been found to amount to 10 to 25% of the total number. In Paris, some years ago, Professor Grancher, in an investigation of over 6,000 school children, found that about 18% were in this condition; in Boston the percentage was found to be somewhat higher, — nearly 25%, — and elsewhere the average is 15 to 25%. It is for such children that our open-air schools, fresh-air rooms, etc., are intended. A child with active tuberculosis of the lungs should not go to any kind of a school, but should be sent to a sanatorium or hospital and be treated for his lung condition; if at such an institution he can be given some instruction as well, so much the better. At the present time there is practically no state institution where such children can be sent. It is to be hoped that the state will take immediate measures to meet this need.

Coming to that other class of children, those in the pre-tuberculous stage, we find the situation only slightly more encouraging. What has been accomplished so far has been done either by private organizations or by a few cities. There are two open-air schools in Massachusetts, one in Boston and one in Cambridge. The credit of establishing the first open-air school in this country belongs to Providence, R. I. Soon after this, such a school was opened in Boston, at first under the auspices of the Boston Association for the Relief

* Read before the annual meeting of the Springfield Anti-Tuberculosis Association, Nov. 9, 1910.

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and Control of Tuberculosis, but later taken over by the Consumptives' Hospital Department of the City of Boston.[1] It is now planned to have an "open-air room" in each school in the city, and thus to give a far greater number of children the benefit of this treatment.

Of greater importance, however, than a single open-air school in a city, or a few fresh-air rooms in our schoolhouses, is the question of proper ventilation and sufficient fresh air for all of our schoolchildren. It is surely a very poor policy to wait until a child has become run down and anemic before we decide that what the child needs is fresh air. We are coming to realize that the health of our children is of greater importance than the development of their brains. An open-air school will do a great deal of good to a small number of children, but it will do a far greater good in proving to the city authorities and to the public at large that well children as well as sick children need and must have fresh air.

We are doing only a small part of our work, however, if we stop at providing open-air schools or fresh-air rooms. We must not only give the children fresh air at school, but we must teach them how to live in their homes. This is the most important part of our work. In 1908 a law was passed by the legislature that tuberculosis and its prevention should be taught in our public schools. This law met with considerable disfavor and has accomplished practically nothing. In very few places has active work been done in instructing children in "tuberculosis and its prevention," or in other matters of health and hygiene. There are a few striking examples, however, of excellent work in this direction, particularly in Salem and in Fall River. In Salem, school children have been given talks on the subject of how to live, and how to avoid tuberculosis and other diseases, and have written short essays on what they have learned. Some of these I have read, and I was very much impressed with the knowledge shown on this subject. In Fall River a similar work is being carried on in the schools, particularly by means of a school tuberculosis exhibit. This consisted of a number of separate pictures, mottoes, etc., hung up in the schoolroom, demonstrating certain fundamental truths of hygiene and health.

Last year a bill was introduced into the legislature by the Tuberculosis Committees of The Massachusetts Medical Society to authorize a small appropriation for the formation of school tuberculosis exhibits. This bill was approved and signed by Governor Draper. Twenty such exhibits have been prepared under the supervision of the Board of Trustees of Hospitals for Consumptives. This did not prove to be an easy task. Such an exhibit should be cheap, so as to be within the reach of small towns and villages. It should be light, so that it can be easily handled and moved from room to room. It should be compact, so as to require little work in setting it up and taking it down, and, last, the lessons it teaches must be simple and striking. These features I have tried to combine in our school exhibit, with what success remains to be seen. It should be understood that these exhibits are in the nature of an experiment, and that the Board of Trustees will be only too glad to receive criticisms and suggestions as to the makeup of future exhibits. The price of each exhibit is $35. It consists of two large frames about 4×5 feet, which fold together so as to form a strong, compact box. This box or frame can be easily handled by two men, and can be locked and shipped with perfect safety. Each side of the frame contains twenty-four 8×10 inch smaller frames, in which are set pictures or mottoes. The pictures are covered with celluloid instead of glass. There is a row of mottoes along the top, and another row along the bottom, stating simple truths in regard to various questions of health, hygiene, tuberculosis and how to avoid it, etc. There are photographs, plainly labeled, showing various bad tenement conditions, dusty, dangerous trades, sweat shops, good and bad workshops of various kinds; there are pictures of sanatoria, tents, balconies, etc., for home treatment; pictures of outdoor schools, playgrounds, swimming pools and other similar subjects. Any mention of figures or statistics has purposely been omitted. A pamphlet has been prepared, which will be widely distributed, to go with the exhibit, with suggestions as to its demonstration. It is planned, where possible, to have tuberculosis societies buy this exhibit, so that with the money we may prepare others. Already this exhibit has been placed in Boston, Brookline, Cambridge, Canton, Chelsea, Clinton, Fitchburg, Gardner, Holyoke, Pittsfield, Springfield and Worcester.

We hope that before long many other anti-tuberculosis societies will realize the need of getting at the children by some such method as this. I would summarize this subject as follows:

1. There is practically no place in Massachusetts where young children with open pulmonary tuberculosis can be sent and properly cared for.

2. There are not more than one or two open-air schools where the many thousand anemic and run-down "pre-tuberculous" children can get fresh air and sunshine in addition to a knowledge of reading, writing and arithmetic.

3. Although there is sufficient legislation on the subject, there is at present very little instruction given to young children on hygiene, right living and the prevention of tuberculosis and other diseases.

As remedies for this state of affairs, and as an outline for future work of anti-tuberculosis societies, I would suggest the following:

1. Every effort should be made to get the state and local authorities to provide adequate facilities for the care of children with pulmonary tuberculosis. One effective way of doing this is to make application for the admission of all such cases to the state sanatoria. The strongest argument which the board of trustees of the state sanatoria can use before the legislature is a long list of applications from children for whom there is no place,

[1] This institution is no longer a school, but a day camp or hospital for tuberculous children.

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nor for whom, with the present appropriation, can a place be provided.

2. Earnest and intelligent co-operation with the local school board to provide an outdoor school or fresh-air room for pre-tuberculous children; if such a school or room is established, the attention of the city legislature and board of health should be called to the good which it does.

3. It should be insisted upon that the terms of the 1908 act, that "tuberculosis and its prevention shall be taught in our public schools," etc., be complied with. This can best be done by means of tuberculosis exhibits prepared along the lines of those now loaned by the state, placed in all the public schools, and demonstrated wherever possible by doctors, nurses or social workers.

I know of no more fundamental or important work for any anti-tuberculosis society to take up than this.

## THE THERAPEUTICS OF LIGHT.*

BY HERBERT MC INTOSH, A.M., M.D., BOSTON.

THE pioneer work of Finsen has served to direct attention in recent years to the utility of light therapeutics. Though his labors were chiefly confined to the treatment of lupus, in the control of which he achieved brilliant success, later students have found that light is applicable to the treatment and cure of a wide range of troubles. The purpose of this paper is to indicate, first, why, upon theoretic grounds, it is fair to conclude that light should exert an important effect upon the cure of disease, and, secondly, to indicate in a general way some of the uses to which it may be put.

It is scarcely necessary to say by way of introduction that light is the condition of terrestrial life. Whatever the life principle is, and it is still a profound mystery, it cannot manifest itself except under conditions made possible by light, and in the preparation of the earth as the habitation of man the precedent evolution of the vegetable kingdom by light was essential.

What a mighty force sunlight is, is made manifest when we reflect that by means of evaporation millions of tons of water are daily lifted into the atmosphere to descend as rain, and fill the water courses which in turn will ultimately be called upon, as the coal in our mines — the product of the sun's mighty activity in the carbonaceous period — is consumed, to supply power for industrial and domestic uses.

In like manner the same silent energy in the springtime lifts the sap from the roots into the trunks and branches of trees and into the stems of countless forms of vegetable life; in the aggregate an uncomputed weight of life-bearing fluid.

The influence of sunlight upon protoplasm is illustrated by many chemical phenomena. Thus bilirubin is oxidized into biliverdin by sunlight even when air is excluded and $cl_2$ unites with $C_2cl_4$ in sunlight forming $C_2cl_6$. Chlorine unites with hydrogen in sunlight with explosive violence to form hydrochloric acid.

The fermentative effects of light are very notable. Thus Niepce de Saint Victor and Corvisant found that a 0.1% solution of starch exposed during six or eight hours to the summer sun becomes transformed into sugar, no change occurring in the dark. In like manner glycogen is transformed into sugar more rapidly in the light than in the dark.

Passing now into the vegetable world, we find that under the influence of sunlight there is formed in the phanerogams or green-leaf plants a product which is called chlorophyll, by means of which the plant is enabled to break up the molecule of carbon dioxide and fix carbon in the form of starch into its own structure, thereby supplying an indispensable food for the sustenance of animals as well as material for the construction of dwellings.

This too brief review of the physical and physiological effects of light in nature prepares us to consider what effect it may have upon human life.

### ABSORPTION OF LIGHT BY BLOOD.

Freund squeezed a drop of blood from the tip of his finger upon a quartz film, surrounded by a rim of paper 0.17 mm. wide, and covered it with another quartz film. The layer of blood completely filled the space of 0.17 mm. and showed uniformly red. The spectrum was photographed through a glass spectroscope by means of sunlight. The exposure lasted five minutes and produced no effect upon the photographic plate from lines F ½ G in the direction of the ultraviolet.

A second experiment was made upon the web of a live frog's foot in which the blood stream was flowing. The foot was placed in front of the slit of the spectroscope and illuminated by sunlight. The exposure lasted five minutes. Under these circumstances the line $H$ ($\lambda$ =3,964 Å) was absorbed. This is very near the edge of the ultraviolet. From this experiment it is clear that blood absorbs light. It is for this reason that Finsen found it necessary in his treatment of lupus to employ compression upon the area treated in order to squeeze out the layer of blood which acted as a screen to the chemical rays.

Finsen's historic experiment with aristo paper placed behind the lobe of his wife's ear and illuminated for five minutes by the concentrated light of an arc lamp established the same fact. Without compression there was no effect upon the paper, but when the ear was compressed between two glass plates until it appeared bloodless, the aristo paper was blackened after an exposure of twenty seconds. From these experiments we may safely infer that blood absorbs light.

Quincke [1] found that hemoglobin gives off its oxygen more quickly in the light than in the dark. Therefore, light increases the oxidation of the tissues.

This action is somewhat analogous to the influence of light upon the molecule of carbon dioxide in the presence of chlorophyll. Here the atom of carbon is dissociated from the bivalent

* A paper read before the Brookline Medical Club, Nov. 9, 1910.

[1] Pflüger's Archives, 1894, vol. lvii, p. 134.

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oxygen which is released, while the carbon in the form of cellulose is fixed in the cellular structure.

Fluorescence is the property which some substances have of absorbing higher frequencies and converting them into lower frequencies. Among these substances are blood and serum. These are, therefore, radiant energy transformers.

What is the significance of this fact that blood and serum like chlorophyll are fluorescent? It has been frequently affirmed, and correctly, that the ultraviolet rays have little penetration, and yet it is generally believed that these rays possess the highest virtue in phototherapeutics. It is certain that Finsen attached the greatest value to them in his therapeutic studies. If, now, they have but slight power to penetrate the skin, their value must be limited to very superficial conditions. Here we are met, however, by the fact discovered by Dr. Henry Bence Jones, in 1866, that blood and serum are fluorescent media. By this is meant that they have the property of absorbing light at one rate of vibration, as, for example, ultraviolet, and transforming it into a lower rate. They are, therefore, transformers of radiant energy, and we are justified in assuming that the absorption of the rays of higher refrangibility by the epidermis is not synonymous with their extinction, but rather with their transformation into another rate of light energy.

Having shown, then, that the ultraviolet frequencies which have little power of penetration are absorbed by the blood stream and have the ability to produce fluorescence and thus profoundly affect the chemistry of the tissues, let us turn our attention to the visible chemical frequencies. These include the upper end of the visible spectrum marked by the blue, indigo and violet. Now, it has been frequently proved that these chemical frequencies of the visible spectrum have marked power of penetration.

Thus Gadneff introduced under the skin of cats and dogs small tubes containing silver chloride. After exposure to sunlight the chloride of silver was found to be blackened, while no change occurred with captive animals kept in the dark.

Darbois[2] put a piece of photographic paper between two watch glasses. He then placed the watch glasses in the mouth against the buccal membrane. The light from a Finsen concentrator was then thrown upon the cheek. The photographic paper was blackened after one minute.

Gebhard[3] imbedded his hand in plaster of Paris, leaving only the back exposed, having placed a photographic plate in the palm. The hand was exposed for twenty minutes to the light of an electric arc lamp. The plate was afterwards developed and showed blackening with outlines of hand and fingers.

Solucha[4] placed strips of silver bromide gelatine under the skin of dogs and sewed up the wounds. The light from a ten to twenty-ampere lamp at a pressure of from fifty to sixty-five volts was thrown upon the parts with the result that decomposition of the silver bromide occurred in one half a minute.

[2] Traitement du Lupus Vulgaire. Thèse de Paris, 1910, p. 80.
[3] Die Heilkraft des Lichtes, Leipsig, 1898, p. 131.
[4] Quoted by Freund.

When the tubes were placed behind the ear or in the mouth against the check, decomposition soon occurred. When, however, the tubes were placed deep in the gluteal muscles, the light had no effect. When placed behind the forearm or in the closed hand there was no decomposition after fifteen minutes.

When, however, the current was increased to twenty amperes at 110 volts, the sensitized gelatine film was chemically altered when placed on the back of the neck or on the side of the body, the rays being thrown perpendicularly upon the film through the tissues.

I placed an x-ray film back of a dental skiagraph and put them between two watch glasses in a dark room. They were then introduced into the mouth between the teeth and the cheek. I then had the light of an arc 2,000 candle-power lamp thrown upon my cheek for about ten minutes and secured a very good picture of the dental skiagraph upon the sensitized film. This was obtained from the rays passing through the cheek. We have thus shown that visible chemical frequencies penetrate the body, and that the ultraviolet rays through their ability to excite fluorescence in the serum and blood stream are converted into chemical rays of lower frequencies.

That the luminous frequencies are capable of penetration is evident from the simple diagnostic procedures employed in the different specialties. Thus a 4 candle-power lamp placed in the mouth is capable of illuminating the maxillary antra; placed in the superior anterior angle of the orbit is capable of illuminating the frontal sinus; when introduced into the stomach by means of the gastrodiaphane illuminates the epigastric and surrounding regions; and when carried into the vagina irradiates an area extending up to the umbilicus.

From this brief survey of the field it is clear that all the frequencies penetrate the tissues, not only the red, yellow and orange, but the highly useful chemical frequencies of both the visible and invisible regions.

Which of these radiations are the most useful in therapeutics? Here again we recognize a general agreement as to the value of the heat waves, so that no need exists to emphasize the importance and value of the rays of greater lengths. Both theoretically, however, and practically, their utility is much less than that of the high rates of vibration. It is only as the wave lengths begin to approximate the diameter of the molecule that the most profound effects are discernible. Thus, while in plant life it is the yellow rays that are chiefly concerned in the function of assimilation, breaking up the carbon dioxide molecule, depositing carbon in the cellular structure and releasing oxygen, it is to the chemical rays that all excitomotor phenomena are due. The rays of greater wave length pass through the tissues practically without change except to impart a portion of their heat to the structures upon which they impinge. In like manner a wave upon the surface of the water is not destroyed

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by an object of smaller size, but will fold itself around it and pass on unbroken, but if it be near the size of the obstructing object it communicates its vibration to the opposing object and is destroyed. In like manner the shorter vibration of the chemical portions of the spectrum surrender their energy in the tissues upon which they strike and thus produce their beneficial effects.

The absorption of oxygen by the blood under the influence of the chemical rays and the fluorescence of blood and serum under the influence of the more refrangible portion of the spectrum go far toward establishing the proposition that it is to the upper end of the spectrum that we must attribute the peculiar value of light treatment. I desire to emphasize this point because it is frequently affirmed by those who have given little consideration to the therapeutic uses of light that the value of light treatment resides in the impartation of heat to the tissues. This is measureably true. With the exception of thermopenetration, which has lately been introduced to the profession and which raises the temperature of the tissues in the path of the high-frequency current from eight to ten degrees, there is no method comparable to light for the production of heat in the tissues. The incandescent bath produces sweating in half the time required by a Turkish bath. This is in spite of the fact that the air in an incandescent bath is but little above the temperature of the body. In a Turkish bath the body is enveloped by a blanket of hot air and the temperature of the body is raised by actual contact with the source of heat. In an incandescent bath the radiant heat and light rays from incandescent bulbs traverse the air without impartation of energy, impinge upon the body, penetrate the tissues and produce physiological changes. The chemical portions of the spectrum undoubtedly produce metabolic effects, though it is usual to regard the incandescent bath as primarily a heat bath. It is in any event a much more agreeable form of heat bath than the Turkish bath, and patients quite invariably prefer the incandescent bath to the ordinary hot air bath.

While, however, it is to chemical rays that the peculiar value of light treatment must be ascribed, for general purposes the whole spectrum of white light is to be preferred. There can be no objection to using, and in most cases there is great value in including, the luminous and heat rays in the treatment of disease. Special indication, however, may call now for the exclusion of the heat rays and now for the exclusion of the ultraviolet rays. For general purposes, however, the full spectrum of white light, such preferably as is furnished by an 2,000 candle-power arc lamp, should be employed, and when only one lamp is used, there can be little doubt that this furnishes the best result. It is not denied, however, that the incandescent lamp of high candle power is a very useful agency for general therapeutic purposes.

Having directed attention to some considerations which should lead us to infer that light should *a priori* exert a favorable influence upon disturbed bodily conditions, let us sum up briefly some of the physiological effects of light which have been experimentally proved.

It is a matter of common observation that the skin may become irritated under the influence of the sun's rays and sustain burns under continued exposure which may produce great discomfort. Thus solar erythema and snow blindness are illustrations of the irritant effects of the ultraviolet rays of the sun.

Similarly, the tanning of the skin in summer time testifies to the influence which the sun's rays exert upon the pigment-producing cells of the *rete mucosum*.

Sweating occurs much more rapidly in an incandescent bath cabinet than in a Turkish bath, yet the temperature in the latter is much higher. Light, therefore, has a marked influence upon the sweat glands.

The effect of the impingement of light rays upon the body is to increase superficial hyperemia, and as a determination of blood to the surface cannot take place without its withdrawal from the interior, it follows that when large areas of the body are exposed to light energy there must be a depletion of the viscera.

Light energy is destructive of bacterial life outside the body. Since, however, this destructive action is due chiefly to the ultraviolet rays, and these are not highly penetrative, we are not permitted to affirm a directly bactericidal action in living tissue. I have already pointed out, however, that blood absorbs light, that the tissues fluoresce under the influence of light, and that the hemoglobin gives up its oxygen to the tissues more readily under light exposure. Herein may be perceived the damaging effect of light upon bacteria in the tissues. For as they are anaerobic, the production of oxygen is unfavorable to their growth and the increased activity of tissue combustion produced by light renders the nutrient media in which they live less favorable to their propagation.

The increased absorption of oxygen by the blood under the influence of light leads to increased activity in tissue destruction, and, therefore, augments the elimination of $CO_2$. In confirmation of this proposition Molschott,[5] Selmi and Piacentini[6] have shown that dogs, hens, pigeons and frogs eliminate less carbon dioxide in the dark than in the light.

In like manner S. Goodnow has shown that human beings and animals secrete more urine, urea and chlorides when continually exposed to daylight than when remaining in the dark. We may thus fairly conclude that light energy increases urinary elimination.

When the nude body is exposed to light energy there is a rise in temperature and an acceleration of both pulse and respiration. These observations of Goodnow have been repeatedly confirmed by the writer. Thus in a recent case treated in the incandescent bath for obesity, the temperature quickly rose from normal to 101°, and the pulse from 80 to occasionally 140. We may conse-

[5] Wien. Med. Wochenschr., 1885, no. 43.
[6] Rend. Conti. del Reale Instituto, 1870, vol. iii, Ser. ii, p. 51.

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questly affirm that light tends to raise the normal temperature and accelerate the pulse-rate. It should be remarked, however, that these results are obtained from the whole spectrum, colored rays tending to lower the pulse, particularly the violet.

Sudden exposure to bright light may produce violent sneezing. This is a reflex from the sensory fibers of the trigeminus distributed to the Schneiderian membrane. Hence we may conclude that light energy may produce motor excitation.

Light markedly increases the number of red blood cells. This has been repeatedly demonstrated after an incandescent bath. It also increases the amount of hemoglobin. Under the influence of light oxyhemoglobin more readily surrenders its oxygen to the tissues, thereby stimulating combustion of the tissues. We have already shown that the solid constituents of the urine are increased, that sweating is promoted and that the elimination of $CO_2$ is augmented.

Cretinism occurs in the dark valleys where the rays of the sun never penetrate, and amenorrhea afflicts the Eskimo women during the long Arctic night. It is very evident, then, that sunlight promotes metabolism.

It would be profitable to spend some time, if it were at my disposal, upon the interesting subject of blue light. Many of you will recall the interest excited among the laity, in the 70's of the last century, by the publication of two books upon the use of colored lights. The first, published in 1876 by Gen. A. J. Pleasonton, of Philadelphia, a veteran of the Civil War, is entitled "The Influence of the Blue Ray of the Sunlight." The other is entitled "Blue and Red Light, or Light and its Rays as Medicine." It was written by a physician, Dr. S. Pancoast, of Philadelphia, and published the following year. These books have for us to-day simply an antiquarian interest. The first is highly fantastic, and neither has much scientific value. They excited, however, a great deal of interest, and all over the country houses were supplied with colored lights; generally blue or violet, sometimes alternate red and blue. On Beacon Street opposite the Common you may still see several stately dwellings ornamented by colored lights which are a memorial of the interest excited by these early writers. These books are now out of print, but may be found in the Boston Public Library.

The fact remains, however, that there is a therapeutic value attached to the blue and the red ray. Thus it is undeniable that the blue ray exerts a constringing effect upon the blood vessels and a soothing influence upon the peripheral nerves, and there is now a general agreement that the blue light is analgesic and in some instances anesthetic, and much clinical proof can be furnished to sustain this proposition. For the relief of superficial neuralgias, as, for example, trigeminal neuralgia, the results are sometimes very astonishing. Myalgia and arthritis similarly often yield promptly to the blue ray. Von Jaksch [7] dwells upon the soothing effect of blue light and uses blue chimneys upon his lamps in his sick wards. The healing of wounds is promoted by the blue light, and Pansini has shown by an elaborate study fortified by ergograms that blue light increases the power to do muscular work.

The efficacy of red light in smallpox depends upon the exclusion of the blue ray rather than upon any virtue residing in the red ray. The chemical ray promotes suppuration. If, therefore, the blue ray is excluded, pitting is prevented and the comfort of the patient promoted by the admission of red light. The use of the red ray in smallpox is associated with the name of Finsen, who was an enthusiastic advocate of this method of managing variola. He was not, however, the first to employ red light in this disease. John, of Gaddesden,[8] who died in 1361, was the author of the first medical treatise in the English language. The son of King Edward I, who was afflicted with smallpox, was under his care. He was placed in a bed with scarlet hangings and red blankets and counterpane. His throat was gargled with mulberry wine and his mouth washed with the juice of red pomegranates. The royal patient recovered without the usual disfigurements attending this dread disease. In Queen Elizabeth's time the value of red curtains and red glass was strongly affirmed by certain physicians, who, however, were regarded by the orthodox physicians of the day as charlatans.

Finsen, while reading in the library at Copenhagen, ran across an account of some sailors, suffering from smallpox, who were confined in a darkened room at New Orleans and recovered without pitting, and was thus led to recommend the exclusion of the chemical rays in the treatment of this disease. Finsen [9] condemns unsparingly the treatment of smallpox cases without the exclusion of the chemical frequencies of light.

Apart from these obvious uses of colored lights, there is undoubtedly a psychical aspect to the problem. Blue is a so-called "quiet color." It is associated with the quiet of the evening, the calm of the twilight and is the symbol of peace. Red, on the other hand, is a so-called "loud color" and is associated with the activity and bustle of the day and is the symbol of conflict and passion. The bull is maddened by it; unchaste women select it as the emblem of their unhallowed traffic, and the ancient temples of Venus were richly adorned with it.

More or less study of the effects of colored lights upon insane patients has been made, somewhat confirmatory of the conclusions already noted. Maniacal patients have, in some instances, been quieted by blue lights, while those afflicted with melancholia have been to some extent relieved by red. At the present stage of experimentation it would not be safe to affirm either uniform or positive results. In some instances they have been negative, as in the experiments of Von Paquet of Moscow.

The value of sunlight in surgery is well illustrated in a paper read at the Second International

[7] xx. Congress für Innere Medizin, 1902.

[8] Phila. Med. Jour., Dec. 7, 1901.

[9] Brit. Med. Jour., June 6, 1903.

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Congress for Physiotherapy at Rome, Oct. 13–16, 1908, by Dr. Oskar Bernhard Moritz.[10] The remarkable results which this surgeon has attained in the healing of wounds, ulcers and skin affections he attributes (*a*) to the increased proportion of ultraviolet rays contained in the sunlight of elevated regions. Thus Oberengadin in the Alps, where the results reported were secured, is 1,800 meters above the sea. Here the weakening of the sun's rays through filtration through the atmosphere is enormously decreased and the ultraviolet rays possess greatly increased power. It is to this circumstance that Dr. Moritz attributes the freedom of the mountaineers of the high Alps from lupus and skin cancer, affirming that a chronic solare eczema renders the skin resistant to the invasion of bacteria. (*b*) To the remarkable dryness of the atmosphere in these elevated regions. Here again, however, we have an explanation in the increased ultraviolet content of the sun's rays, since even small quantities of water vapor act as a screen to the passage of the ultraviolet ray; and (*c*) to the absence of bacteria from these elevated regions. A little reflection here will again make clear that the absence of bacteria from mountain air is due to the increased proportion of ultraviolet rays in mountain sunlight.

Dr. Moritz cites the remarkable effect of sunlight upon a wound made in extirpating the spleen, which had broken open on the eighth day after operation, holding only by the peritoneal edges. In spite of curetting and cauterizing it had made no progress in healing. After an hour and a quarter's exposure to sunlight there was a distinct improvement, the granulations were markedly better and stronger and the great gaping wound under this treatment healed quickly. In grafting he simply lays the grafts in the sun upon the dry granulating surface. Within a quarter of an hour it is usually impossible to detach the grafts from the underlying tissue without exerting considerable force.

In like manner drainage becomes unnecessary for the most part in deep wounds, since insolation both dries out the deep pockets and incidentally destroys bacteria. Ulcers and cavities become through insolation in a short time pure and dry. They are quickly covered with a shiny fine parchment-like skin which usually lasts for from twenty to thirty hours, when the wounds are again exposed to sunlight. Any one who desires may readily verify these statements. A wound exposed to sunlight or the electric arc is quickly covered with a parchment-like membrane and the edges are crumpled and drawn together. Frequently no dressing is required.

With equally favorable results Dr. Moritz employs the insolation method in cases of tuberculosis of the skin, glands, joints, bones and larynx.

It is important to observe that in the method of Dr. Moritz, the rays of the sun are not concentrated, neither is there any exclusion of the heat rays, for which he claims under proper conditions both chemical and bactericidal power. In the winter the direct rays of the sun are reinforced by reflection from snow and ice. He reports cases of scrofuloderma which had resisted all other therapy for three years but yielded to sunlight treatment after three months, and two severe cases of lupus, one of which had involved the soft palate and the vocal cords. In cases of bone and joint tuberculosis he combines insolation and immobilization, placing the disabled part in a plaster of Paris jacket and exposing it to the sun's rays through openings cut in the dressing.

Among the other surgical conditions for which sunlight treatment is valuable, he mentions crushing wounds, ulcera cruris, perforating ulcer of the foot, wounds caused by infection, as abscesses, paronychia, furuncle, carbuncle, soft ulcers, buboes, and syphilitic ulcers associated with specific treatment.

It is possible that the very remarkable results obtained at high elevations could not be secured at lower elevations, and that there is a peculiar virtue in sunlight at these high altitudes. It is nevertheless true that sunlight treatment can be employed with advantage in many cases which are carefully excluded from the light by dark dressings, and particularly in those cases which have shown themselves rebellious to ordinary treatment.

It remains for me to state briefly the apparatus required for light treatment. The most generally useful apparatus for office use is in my opinion the arc lamp of 2,000 candle power. This furnishes the whole spectrum, including the ultraviolet rays, upon the importance of which I have sought to lay emphasis in the preceding pages. It furnishes a tremendous volume of rich chemical rays both visible and invisible, as well as abundant heat rays. Screens may be used to furnish blue or red light.

A substitute for the arc lamp is the high power incandescent lamp. Here, however, the ultraviolet rays are entirely cut off by the inclosing bulbs, and the treatment is necessarily to a large extent a radiant heat treatment. This is, of course, of great value, but manifestly inferior to a treatment which utilizes the whole spectrum as does the arc light.

Next there is the incandescent bath cabinet, a most useful apparatus, in which the nude body of the patient is exposed to the radiance of fifty or more sixteen-candle-power incandescent bulbs. With this apparatus it is necessary to combine certain hydriatic procedures in order to produce a suitable reaction and prepare the patient for exposure to ordinary temperatures.

The arc bath cabinet is also a highly useful apparatus. This is a cabinet six or more feet in length and of suitable width and height. It contains a cot upon which the patient lies nude and exposed to the rays from two powerful arc lamps. It is an artificial sun bath.

For dermatological uses particularly, there are lamps after the pattern of the Lortet et Genoud lamp designed to take the place of Finsen's enormous concentrators. These have quartz

[10] Jahrbuch über Leistungen und Fortschritte auf dem Gebiete der physikalischen Medizin, 1908, p. 77.

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windows to permit the escape of the ultraviolet rays so important in most therapeutic treatments. Then there are small lamps with iron or other metal electrodes and quartz windows which are almost exclusively ultraviolet lamps.

Finally, there is the Kromayer mercury vapor lamp in which a current of electricity is passed through volatilized mercury, producing a peculiar greenish-blue light. This is provided with quartz windows for the egress of the ultraviolet rays. It has been used chiefly abroad for therapeutic purposes and has recently been adapted to the sterilization of potable water. It is attached to the water faucet and automatically and absolutely destroys all bacteria, rendering water thus irradiated safe for domestic purposes.

*Summary.* In this brief sketch of the therapeutic uses of light, I have endeavored to show

(*a*) That light penetrates the tissues.

(*b*) That in so doing the chemical rays produce fluorescence of the blood and serum which is reduced or absent in pathological states, as, for example, in malaria.

(*c*) That the action of light upon the blood stream reduces oxyhemoglobin and thus stimulates the chemistry of the tissues, that is to say, improves metabolism.

(*d*) That the most useful portion of the spectrum is not the heat or luminous portion, but the chemical portion.

(*e*) That the physiological effects of light flow easily from the marked penetration of the light rays, particularly the chemical portion of the spectrum.

(*f*) That the blue light has a peculiar field in the control which it has over pain and hyperemia.

(*g*) That red light by its exclusion of the chemical rays plays an important rôle in the treatment of smallpox.

Finally, I have given some illustrations of the efficient action of light, of artificial sunlight, and concluded with a brief description of the apparatus employed in light therapy.

My aim has been principally to show that the use of light for therapeutic purposes is rational and that it is a most important addition to the physician's equipment for the management of disease.

## EXTRAPERITONEAL CÆSAREAN SECTION.

BY JAMES LINCOLN HUNTINGTON, M.D., BOSTON.

To realize why this operation was revived and why it was received with such enthusiasm in Germany, one must first bear in mind the condition of German obstetrics. Normal labor is there conducted almost entirely by midwives, who are required by law to call in the obstetrician when complications arise. This results in what we might call ultra-conservative obstetrics — cases come late to operation. The midwives, in spite of their thorough training in the schools under the supervision of the government, and their rigid examinations, are far from being keen diagnosticians or careful practitioners. The number of fatal cases of puerperal fever in Germany annually is still over five thousand. The first indication for operative interference taught the German student in obstetrics is fever during labor (a condition very rarely met with here in America). This is the commonest complication for which the obstetrician answers the cry for help from the German midwife; he comes and finds all too often on examination a contracted pelvis, os fully dilated, membranes ruptured and head above the pelvis brim. What is to be done? The answer was, and still is, in most German Kliniks, craniotomy. Yes, craniotomy on the living child has been far more common in Germany than here in America, and it is because of the frequency of infection during labor for which the midwife is the most constant contributing factor.

But if any one has done this operation, or even seen it executed, he will understand with what feverish ardor the obstetricians in Germany sought for a solution which would save them from performing this hideous operation. The operation of widening the pelvis was looked upon with favor for these cases until the fatalities following even the smallest wound in the vagina — and sometimes apparently without this break in technic — forced the obstetricians to regard infection as the strictest indication against this operation. Then the indefatigable researches into the realm of surgical possibilities revived this forgotten operation of entering the gravid uterus through a wound shut off from the peritoneal cavity.

Before deciding whether or not this operation has solved the problem they were facing, let us review the history of this surgical procedure.

In 1807 Jörg, viewing the high mortality of Cæsareans in the days before antiseptics, conceived the idea of a modified Cæsarean section by opening the vagina and cervix through a low lateral abdominal incision. Acting on his suggestion Ritgen modified this by not opening the vagina, but pushing the bladder to one side and opening the uterus extraperitoneally. In 1821 we have the account of his first attempt at such an operation — an attempt merely, because of uncontrollable bleeding which caused him to change the operation to the classical Cæsarean to save the child's life. The patient died two days later from hemorrhage.

In 1822 Physick, of Philadelphia, in a letter to Dr. Horner, proposed a similar operation, only that he used a transverse incision above the symphysis pubis instead of the median longitudinal incision which Ritgen employed. Again in France in 1823 we have an account of a similar attempt at an extraperitoneal Cæsarean changed during the operation to the classical because of difficulties.

In 1870 Dr. T. G. Thomas, of the College of Physicians and Surgeons in New York, ignorant of previous work along this line, conceived the idea of an extraperitoneal operation and performed such an operation on the cadaver of a young woman who died at term. He found the operation so simple that he resolved to employ it upon the next favorable opportunity. Shortly after this

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he did perform the operation on a patient practically moribund with pneumonia. The object in this case was merely to save the child. He delivered a premature infant that expired an hour later. One of his colleagues, Dr. Skene, of Brooklyn, was much interested in the operation and on Oct. 29, 1875, performed the first successful extraperitoneal Cæsarean section on a primipara long in labor with a much contracted pelvis. The incision was made from the pubis to the right anterior superior spine sweeping upwards above Poupart's ligament. Peritoneum lifted up, exposing the junction of the vagina and cervix. An incision was made at this junction and the child delivered through the wound fifteen minutes after making the skin incision. The baby lived, and although the bladder was opened during the operation, the patient made a good recovery and was successfully operated upon for vesico-vaginal fistula one month later.

Other operations followed and Thomas reports cases with four living babies and a maternal mortality of 40%. In 1892 we have the same author discarding the operation in favor of the classical Cæsarean with aseptic technic.

Dr. Whiteside Hime, in Sheffield, England, was the first European to adopt this new precedure in July, 1878, — the baby lived but the mother died.

Dr. Edis, in London, the same year attempted the operation, but again the mother died.

In 1881 Fritz Frank, realizing the danger of peritonitis following migration of infection from the uterus into the peritoneal cavity, performed a Cæsarean with the incision low down in the anterior wall of the uterus and covered his wound in the uterus by building a tentlike fold connecting the broad ligaments and the parietal peritoneum.

Now we pass from the historical to the present, for the following operations, with but little modification, are in vogue to-day and all have their adherents.

Fritz Frank continued at work on the problem even after aseptic surgery had made the classical Cæsarean so safe an operation in clean cases. Could not some operation be devised for infected cases or for cases so long in labor that the danger of infection made the classical Cæsarean out of the question? On Jan. 14, 1906, he performed the following operation:

Trendelenburg position, abdominal incision transversely two fingers above the symphysis, 12 cm. in length; a like incision was made through muscle and parietal peritoneum. The bladder was now drawn forward exposing the lower portion of the visceral peritoneum covering the anterior surface of the uterus; this was also incised transversely for a like distance. Taking the upper margin of this cut in the visceral peritoneum, it was now freed from the uterus and directed upwards, exposing the lower uterine segment. This flap of visceral peritoneum was now united to the upper margin of the parietal peritoneum with a row of interrupted sutures. This left the bladder entirely separated from the peritoneal sac, and that organ was then pushed downwards exposing the lower uterine segment much thinned out. This was incised by a tranverse incision 8 cm. in length. The uterus was emptied, the child was alive and easily delivered through the incision. Uterus and abdominal wall closed in layers to wick, which was placed to drain the uterus. This wick was removed on the fourth day, after which the convalescence was uneventful.

In reporting a series of seven cases, Frank claimed that this operation was superior to the classical Cæsarean because it was less bloody for the following reasons: the distribution of blood to the uterus is mainly to the body of the uterus and to the sides of the cervix; the lower uterine segment has a very poor blood supply. Also the placenta, except in abnormal cases, is situated above the lower uterine segment and so the incision does not enter the placental site, which is a very common minor complication of the classical Cæsarean. He also claims that the danger of adhesions between the intestines and uterus is obviated. Finally, that with drainage the operation is applicable to infected cases.

This operation was the first to receive widespread acceptance, and with this came criticism which has continued to the present day. Cases died of peritonitis, and many authorities claimed that this method did not offer any great protection to the peritoneal cavity. Sellheim presented an operation similar to this in 1908 with the change of a vertical median incision both in the abdomen and the uterus instead of the transverse; this he advised for clean cases only. For infected cases he advised a permanent uterine fistula which would heal by granulation.

Meanwhile a pure extraperitoneal operation was devised by Latzko in contra-distinction to this transperitoneal operation. His technic is as follows: For clean cases he finds no advantage in either the transverse suprasymphysial or the median incision. In cases where there is a fair chance of infection, he prefers the median incision as safer. He advised filling the bladder with 150–200 ccm. of fluid before beginning the operation. He advocates pushing the bladder from the left towards the median line, as Martin has pointed out that at the end of pregnancy the bladder is pushed somewhat to the right, so that the left border of the bladder is approximately in the median abdominal line. In pushing the bladder off from the cervix very little bleeding is met with; a single hemostat is all that he has ever found necessary. The bladder and the right rectus are drawn to the right by a flat retractor. The thin drawn-out lower uterine segment and cervix are now exposed. A median incision is made in the cervix extending just through the boundary of the lower uterine segment. By this method one does not have to worry about the ureters and the large vessels.

After delivery of the child it is well to wait for at least one uterine contraction before beginning to repair in order that the parts may assume a little more normal relationship. In all clean cases he advises complete repair of all the tissues, sewing the abdomen up tight, but in infected cases he

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advises putting a wick to the angle of the retrovesical space. Latzko was able to perform this operation to the delivery of the child in nine minutes, — consuming twenty minutes for the entire operation.

This operation seemed to have solved the problem. But as the number of operations on infected cases increased, the mortality rose. The technic is so difficult that often the peritoneum will be opened or so badly bruised that it loses the ability to longer resist bacterial invasion. Then, too, the bladder is often opened. Latzko still firmly maintains that infection of this region is not so likely to occur as is peritonitis when the peritoneum is opened, because of the greater resistence of these tissues. Also, that when infection does occur, it is not such an alarming complication as is peritonitis. But many disagree with him. Bumm, who three years ago considered that this operation had absolutely supplanted the classical Cæsarean, stated last March to the Obstetrical Society of Berlin that this operation, while he personally preferred it, had very little to offer over the classical method. He felt assured that this operation should only be employed in clean cases.

Walthard, in Frankfort, finds no advantage in the extraperitoneal Cæsarean section. He prefers entering the lower uterine segment because of the advantages this has to offer, but he makes no attempt to perform an extraperitoneal operation, feeling assured that sepsis in the retrovesical space is not only as likely to occur as peritonitis, but is as dangerous. He advises craniotomy in infected cases.

Döderlein uses practically the same technic as that of Latzko, but he considers the operation only indicated in clean cases where pubiotomy is contra-indicated, namely, in cases where there is great rigidity of the soft parts, as in most primiparæ, or where the pelvis is too small.

Hofmeier points out that in many of these cases the amniotic fluid has entirely escaped for a long time and the uterus has shut down on the child so firmly that all attempts at delivery are difficult and forceps or version through the abdominal wound often have to be resorted to. He also points out that in cases where a rapid delivery is imperative to save the child's life, the classical Cæsarean is the operation of choice, because no other method offers such a quick emptying of the uterus.

Küstner advises the transperitoneal operation in those cases where the membranes have not been ruptured, and the pure extraperitoneal section for those cases where the membranes have long been ruptured and the danger of infection is considerable. He has also designed a special pair of forceps for delivering the head through the abdominal incision.

Hartman states that in cases where the head is pushed firmly into the pelvic inlet and the membranes ruptured, his operation of choice is pubiotomy instead of extraperitoneal Cæsarean because of the difficulty in delivering the child through the abdominal wound.

But many critics have said that this operation of extraperitoneal Cæsarean section was fraught with great danger of rupture of the lower uterine segment in subsequent pregnancies. Their reasons for this have been on theoretical grounds because of the tendency of the lower uterine segment to rupture spontaneously. However, all observers state that such is not their experience. Lichtenstein reports a second extraperitoneal operation which showed absolutely no thinning of the lower uterine segment in the line of scar, and a second case that delivered herself of twins after forty hours twenty minutes in labor, having had with her previous pregnancy an extraperitoneal Cæsarean. Rubeska reports a case where on the second operation the scar in the lower uterine segment could not be discovered.

The advantages of these operations seem to be, first, that labor can be allowed to go on normally to see if the head will mold into the pelvis, and, when it fails so to do, to have a comparatively safe operation to fall back upon. Added to this are other considerations. The peritoneal cavity remains entirely out of the operation; blood, amniotic fluid and uterine secretions are all excluded. There is no danger of adhesions between the intestines and uterus or abdominal wall. There is less likelihood of hernia in scar. The placenta can be freed in the normal manner and be delivered in the physiological way. The lower uterine segment, because of its thin walls, can be much more quickly repaired. There is less likelihood of hemorrhage. Added to this in infected cases there is a questionable possibility of draining and obtaining a satisfactory result. On the other hand, there is the difficulty of technic, which is made much more difficult, sometimes impossible, if labor has not progressed far enough to thin out the lower uterine segment.

This was the situation when Dührssen and Solms brought forward their new operation, which they claim has forever solved the question of craniotomy on the living child. Their claim for the operation was that it supplanted absolutely the premature induction of labor, the classical Cæsarean section, hebeostomy, perforation of the living child, prophylactic version and high forceps.

Their first operation was performed Dec. 22, 1908, with the following technic: at the beginning of labor a metreurynter was placed in the uterus and filled with 300 ccm. of fluid. An incision was made from the median line to the left anterior superior spine through skin, muscle and fascia. The blunt dissection of freeing the bladder from the uterus was very easy because the plica-vesico-uterina is but lightly attached at the sides, more firmly in the median line. This dissection was accomplished with very little bleeding. The lower uterine segment was now exposed; an incision was made a little to the left of the median line practically large enough to deliver the head of the child. But to make the operation of extraction easier, the metreurynter was now drawn down and the regular vaginal Cæsarean performed from below, so that the incision in the cervix joined the incision in the lower uterine segment. The

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metreurynter was now removed and the child easily delivered above the pelvic brim by means of forceps through the abdominal wound. In clean cases the tissues are accurately repaired; in infected or suspicious cases a drain of iodoform gauze is placed in the abdominal wound and the anterior vaginal wall closed merely to the wick, thus draining the wound through the vagina. As yet only a few such operations have been performed and most of these by modifying the technic in so far as the vaginal operation is first performed and then the abdominal.

Liepman, after performing this operation successfully, passes the following judgment: "The Solms flank Cæsarean is, even for one trained in surgical technic, of all Cæsarean attempts the hardest to execute," but he adds the following summary: no other Cæsarean operation is so certainly extraperitoneal. Unlike other Cæsareans, it can be performed early in labor. It offers the best chance for efficient drainage. Here, as in no other method, the third stage of labor can take its normal course without delaying the operator. No other method is so distinctly limited to the lower uterine segment, thus removing practically all danger of rupture of the uterus in subsequent pregnancies. Finally, no other Cæsarean gives such cosmetic results, the scar being less noticeable than one after the operation for the cure of inguinal hernia.

Thus we have many operations aimed to supplant craniotomy as the treatment indicated for the complication of a contracted pelvis and infection during labor. All except the last have, in the opinion of most obstetricians, failed to accomplish their purpose. The last operation has not as yet been given the test of time. But these attempts have not been in vain, for they have given to midwife-stricken Germany a safer operation than the classical Cæsarean for uninfected cases advanced in labor.

It is a question what application we can make of any of these operations. But it would seem as if the experienced obstetrician should make himself familiar with the technic so that in a case of contracted pelvis, moderate in degree, the patient should be allowed the test of labor with the possibility of a successful Cæsarean and a living child should the head fail to enter the superior straight.

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# Medical Progress.

## PROGRESS IN SURGERY.

### THORACIC SURGERY.

BY SAMUEL ROBINSON, M.D.

(Concluded from No. 23, p. 877.)

#### PROGRESS IN THORACIC SURGERY IN HUMAN BEINGS.

AT least fifty surgical clinics are now provided with some form of differential pressure apparatus, and not less than two hundred operations have now been recorded. It is perhaps unfortunate, but at the same time readily understood, that many recent thoracic operations have been done with the application of apparatus for lung inflation which were originally undertaken without differential pressure. It is to be hoped that surgeons who have doubted the value of the use of differential pressure will not regard the reports of such cases as intended to advocate the necessity of this method in all thoracic operations. It has been necessary for operators to become familiar with the mechanism and application of such apparatus. There are furthermore certain thoracic procedures which may or may not result in impairment of respiration, and while some operators have been content with having apparatus at hand in case of need, others have employed it throughout the operation, knowing that its effects at least would not be harmful.

Differential pressure is proving to be of value under the following conditions:

1. For reinflation of the lung at the end of any thoracic operation followed by tight closure of the thoracotomy wound, a persistent pneumothorax being regarded as favoring infection and likely to produce respiratory and circulatory disturbances.

2. In operations upon the chest wall in which the pleura may be accidentally or intentionally

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opened, the absence of pleural adhesions in such cases favoring the complete collapse of the lung, with possible fatal results.

3. Operations for lesions, such as abscess and gangrene or hemorrhage, to prevent the aspiration of blood or pus to the opposite lung.

4. For hemothorax following stab or bullet wounds of the lung, inflation of the latter facilitating the discovery of such lesions.

5. For all intrathoracic operations in which the absence of adhesions is suspected, a complete collapse of one lung being a fatal occurrence in certain individuals susceptible to a wide open pneumothorax.

6. Resections of the chest wall for tumors in which the surface of the lung is to be utilized to occupy the denuded area.

7. In certain cases of metapneumonic empyema in which after the evacuation of pus it may seem advisable to reinflate the lung and close the wound (Sauerbruch).

8. In thoracic operations in which possible laceration of the mediastinum (esophagus resections) may lead to double pneumothorax, the latter being invariably fatal.

9. In heart suture by the transpleural method to prevent retraction of the heart and pericardium, and to control the heart beat by regulated pressure.

10. In cases where normal respiration is labored by stenosis of the air passages.

11. In cases of lung excision to lower the pressure in the empty pleural space by hyperinflation of the remaining lung tissue.

It may be said that the greatest contribution of differential pressure to progress in thoracic surgery thus far has been that it has provided a means by which the thoracic cavity may be thoroughly explored on either side with almost as little shock to the individual as in exploratory laparotomy. Tiegel and Willy Meyer have thus explored cases of malignant diseases of the esophagus to determine the extent of involvement and adhesions. In those cases in which they have considered the lesions inoperable, with the aid of differential pressure they have obliterated the operative pneumothorax by reinflation of the lung, sutured the wound, and complete recovery from the operation has followed. Lilienthal has explored the thorax under intratracheal insufflation to localize an abscess of the lung.

While it is true that a large proportion of thoracic operations performed in the past could have equally well been done without differential pressure, it must be conceded that, thanks to this new resource to avoid the dangers of pneumothorax, another group of cases hitherto considered inoperable will be and have recently been attempted. The mortality of this new group will undoubtedly be high at the outset because the technic of certain procedures in the thorax has not been developed in the human being. The interest in the use of differential pressure has furthermore developed a renewed enthusiasm for investigation in the thoracic field, and for this reason it is evident that the general technic in certain operations is being improved, although the progress may not be directly attributable to the use of differential pressure.

We may, therefore, review the present status of surgery of different thoracic lesions in turn, whether the progress may or may not be due to the use of apparatus.

1. *Abscess and Gangrene of the Lung.* Inflammatory processes at the periphery of the lung with pleural adhesions and external signs continue to be operated with low mortality, the drainage in such cases being not unlike that of a localized empyema. Certain cases have been reported as fatal due to the aspiration of infectious material following the loss of reflexes under deep anesthesia. The recent developments in the use of non-toxic local anesthetics has encouraged the use of local anesthesia even to the extent of rib-resection for the drainage of pus cavities connecting with the bronchus. The use of positive pressure has demonstrated that, even under deep anesthesia, the secretions are forced peripherally as soon as the abscess is opened; but inasmuch as at this last stage of the operation the aspiration may have already occurred, use of local anesthesia and the maintenance of coughing and expectoration will doubtless be regarded as a preferable method to deep anesthesia even under positive pressure.

There is a small group of cases in which the abscess may be central and lacking localization by auscultation and percussion of physical signs. In exploratory thoracotomy, palpation of the lobes is facilitated by inflation. That portion of the lung found to contain the abscess cavity may be sutured to the chest wall in preparation for a second drainage operation. This technic of walling off a normal pleural cavity before opening the abscess is undoubtedly facilitated by the inflation resulting from the use of pressure.

The methods of Koerte and Lenhartz of excising an abscess cavity and suturing the skin and muscle flap to its base have attracted some attention, but have not as yet been generally accepted.

2. *Bronchiectasis.* The operative treatment of this condition has hitherto been most unsatisfactory. Those cases in which so-called bronchiectatic cavities have been drained by the usual methods have rarely resulted in final cure, and frequently in the establishment of bronchial fistulæ. It is conceivable that some of the more favorable cases known as bronchiectatic abscesses may have been localized lung abscesses not associated with diffuse bronchiectasis and not characterized by the presence of influenza bacilli, which have been found to be omnipresent in true bronchiectasis (W. H. Smith). More frequent have been operations in which one bronchiectatic cavity was drained without improvement of the patient because of the presence of multiple other cavities in the same lobe. The examination of such lung specimens at autopsy indicates that operative removal of the disease is only possible by at least the excision of one lobe to which in certain cases the disease may be confined. The investigators of the use of differential pressure who have learned the successes of lobe excision in animals are now attempting the same procedure

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in the human. Willy Meyer has attempted lobe excision in three cases of bronchiectasis under positive pressure without success, although it must be admitted that the frank and detailed description of his operations is a great contribution and does not discourage further attempts. The presence of bronchial secretion during the preliminary anesthesia previous to the ligation of the bronchus and the firm adhesions between the lobe involved and neighboring structures and the poor resistance of such patient to operative procedure were factors which evidently influenced his results. Garré has successfully removed a bronchiectatic lower lobe. He performed rib resection to collapse the chest wall to the root of the bronchus, delivering the lobe extrathoracic and amputating it at a second operation. Kuettner reports two cases of diffuse bronchiectasis in which the lobes involved were freed from adhesions and a portion of the chest wall excised presumably to allow collapse A second operation for drainage was done in one patient whose wound remained unhealed. The other patient could not be traced. Lung excision was not performed in either case. Positive pressure and negative pressure were used respectively. Schmidt, Petersen and Forlanini report the cure of three bronchiectatic cases by the production of artificial pneumothorax with nitrogen injection.

3. *Tumors of the Lung.* The recent revival in accuracy in diagnosis and treatment of lung conditions has led to the conclusion that malignant disease in the lung and pleura is of more common occurrence than previously recognized. It is undoubtedly the least favorable condition for operative attack of all thoracic lesions save perhaps cancer of the esophagus. Two cases are reported by Kuettner, one recognized by sputum examination, the other at time of operation. One case died subsequently of cachexia in which excision is not reported; the other was improved by the removal of a sequestrum in the center of the malignant portion. The ever-present extensive adhesions associated with malignant disease of the lung will always continue to be an obstacle to the only possible surgical treatment, namely, excision.

4. *Empyema.* Patients afflicted with empyema in which the lung has become adherent are not prone to the serious symptoms which may in other conditions follow an operative pneumothorax. There are, however, certain cases of extensive purulent pleurisy immediately following pneumonia in which adhesions have not formed and in which the sudden onset of operative pneumothorax in conjunction with the existing pyothorax may cause some embarrassment of respiration. Such cases are rare, however, and the symptoms may be avoided by plugging the drainage opening at the end of expiration. When such conditions can be anticipated, the use of differential pressure is an additional safeguard. In cases of double empyema both sides may be operated at the same time under differential pressure, provided one chest is closed tight at the end of the operation. The report by Sauerbruch, in 1908, of two cases of acute empyema operated under differential pressure with tight closure of the wound after the evacuation of pus, resulted in recovery, and seemed to promise a new source of prevention of chronic empyema cavities. Willy Meyer has, on the contrary, operated upon three such cases, in two of which "pocketing" occurred and a second drainage operation was necessary. The duration of the disease was somewhat shortened, however. There is reason to believe that if fibrin and lymph clots are removed at the operation and the pleural surfaces treated with antiseptic preparations, it will be safe to re-expand the lung, approximating the pleural layers and hermetically closing the operative wound. Some progress will doubtless be made along these lines.

The antiseptic methods of Murphy and Beck with the injection of glycerine and formaline, or bismuth and vaseline, have undoubtedly contributed to the treatment of empyema. Toxic effects have been noted, but may be avoided with skillful application of the treatment. Certain cases have been reported as cured by the Beck method because the wound had closed. In such cases a cavity may persist which is filled with a sterile non-purulent material from which no toxic absorption occurs, and which is eventually obliterated by the thickening of the pleura and the slow formation of granulation tissue. As the methods of antiseptic injections and the use of differential pressure are improved, a marked diminution in the number of patients with chronic empyema may be looked for. Both positive and negative pressure have been successfully employed in the re-expansion of the lung during the convalescence from empyema operations. Some observers have employed pressure at the end of the drainage operation and attempted to seal the wound without suture with absorbent dressings. Subsequent changes of dressings have likewise been performed under differential pressure, and these observers have believed that the re-expansion of the lung was favored and the convalescence shortened by these procedures. It may be stated, however, that the faithful use of so-called "blow-bottles" should accomplish the same results; and it is doubtful if this repeated application of differential pressure apparatus will continue to be regarded as of particular value.

5. *Tumors of the Chest Wall.* Haecker and Sauerbruch have reported six favorable results from excision of portions of the chest wall with plastic operation of skin and muscle flap upon the exposed lung to cover the defect in the thoracic wall. Resection of chest wall tumors has always been attended with considerable success and will doubtless be attempted with greater persistency when differential pressure is available to maintain lung inflation both during and at the close of the operation. The success of such operations seems to depend largely upon the avoidance of leakage, and it may be said that the use of artificial lung inflation will favor the tight closure of the wound inasmuch as the lung itself can thus be utilized to assist in closing the defect.

6. *Foreign Bodies.* The extraordinary develop-

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ments in bronchoscopy made by Bruening, Killian and others have resulted in the successful removal of foreign bodies even in the terminal bronchi, and the necessity of transpleural approach is thereby lessened. Meanwhile, however, the safety of exploratory thoracotomy which is guaranteed by the use of differential pressure justifies the transpleural route with good chances of ultimate success in cases beyond the reach of bronchoscopy.

7. *Oesophagus.* Thirty-seven cases of resection of the esophagus in human beings have been reported with a mortality of 100%, and a large majority of these have been performed under differential pressure. Attempts to approximate the end of the esophagus after resection of a cancerous portion have been even more unsuccessful than in animal experimentation. The common explanation is that this lack of success is due to infection of the pleural cavity which is presumed to occur from leakage in the suture. Schmieden believes that this leakage is favored by the suction present in the pleural cavity, a factor which is not present to disturb the healing of abdominal anastomoses. Injury due to a manipulation of the vagus nerve has contributed to death in certain cases (Kuettner and Meyer). There are doubtless other factors which contribute to failure, among which must be mentioned the resultant excessive tension following excision of any considerable portion of the esophagus. Janeway and Green report a case of resection of the lower esophagus and all but the prepyloric portion of the stomach by their combined thoracic and abdominal approach, with death from empyema despite their repeated successes with this operation in animals. It is agreed by those of the greatest experience in view of the recent failures in anastomoses that resection under double ligature with subsequent gastrostomy is the only justifiable procedure at the present time. It is conceivable that the transplantation of the small intestine from the abdomen to the thorax to occupy the gap in the esophagus may be successfully performed. As reported by Roux and others, the proximal end of the esophagus in the neck may be connected to the gastrostomy wound by a segment of transplanted intestine. It is not inconceivable that a like procedure may be undertaken within the thorax.

8. *Bullet and Stab Wounds of the Heart and Lungs.* It is commonly recognized that many cases of bullet wound of the lung heal spontaneously, and that operative interference has sometimes been more disastrous than beneficial. Statistics of such injuries collected by Kocher show, however, that the mortality of all gunshot wounds of the chest is high. The cause of fatalities is ordinarily either hemorrhage or valvular pneumothorax. Both of these conditions are subject to repair by suture after exploratory thoracotomy, which, as has been stated, is a recognized safe procedure under differential pressure. Before the introduction of this agent, injuries to the lung were sutured, but no attempt was made to reinflate the lung and prevent a persistent pneumothorax, the latter undoubtedly favoring sepsis, as demonstrated by a large series of animal operations. It may be concluded, therefore, that in those cases of lung injury in which the signs of increasing hemothorax are present, operation under differential pressure is indicated, and should lower the present mortality in such cases.

Of 128 reported cases of bullet and stab wounds of the heart, 67 have recovered. It is presumed that all successful cases have been reported, and that many failures have been omitted. Therefore, the percentage of recoveries according to these statistics may be misleading. Furthermore, in view of the fact that spontaneous recovery from heart wounds is not infrequent, it may be argued that certain of these reported cases would have recovered without operation. A large percentage of these cases have been performed without the use of inflation apparatus, although oxygen has frequently been employed by the usual methods. The method of attack has with few exceptions been by the interpleural approach. Every conceivable form of skin, muscle and osseous flap has been suggested, with and without removal of portions of the sternum to expose the pericardium without opening the pleura. A sufficiently high percentage of the recovered cases have been treated without subsequent drainage of the pericardium to persuade us that under aseptic precautions this feature is unnecessary.

Autopsies have repeatedly shown that wounds of the lung are not infrequent in conjunction with those of the heart. Such complications have been found to occur in some of the unsuccessful operated cases where the heart alone was sutured. The observations of Haecker and Sauerbruch are pertinent in this connection. By the transpleural route with intercostal incision and use of rib-spreader under differential pressure, the heart and lung are exposed. Without the use of apparatus, such an approach is not justifiable for three reasons. Upon opening the chest the heart will recede to a point where suture is difficult. The exsanguinated patient with weakened heart is more susceptible to the effects of pneumothorax. Reinflation of the lung and obliteration of pneumothorax are impossible without apparatus, and subsequent impairment of respiration and sepsis are favored. (It should be remembered that the intercostal stitch of Mikulicz has further guaranteed the air-tight closure of thoracotomy wounds, and all other forms of suture are frequently attended with leakage.) Under differential pressure, on the contrary, the inflation of the lung on the unoperated side forces the heart into an approachable position, produces a bubbling of air from the concealed perforations of the lung and, furthermore, facilitates the heart suture by controlling the force and rate of the heart-beat in the method which we have previously described under experimental progress. Brewster has, in a case of bullet wound of the heart, verified the recommendations of Sauerbruch and Haecker, demonstrating the possibility of checking the leakage from the perforated ventricle during suture by manual oc-

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clusion of the great vessels at the base of the heart. Both these factors of controlling the pulse-rate by the employment of low differential pressure and diminishing the hemorrhage by direct pressure on the heart vessels are contributed by the trans-pleural method, and consequently are lacking by the more common direct approach through the anterior mediastinum.

CONCLUSIONS.

Gratification may be obtained then from the untiring efforts of many investigators within the last five years.

The perfection of apparatus for the use of both forms of differential pressure has resulted in its adoption in more than eighty surgical clinics, and it has justified its existence not only by making operable a group of intrathoracic lesions which had previously been abandoned, but has also throughout its required use in experimental observations on the dog contributed to the general technic of intrathoracic surgery.

## Reports of Societies.

### AMERICAN LARYNGOLOGICAL ASSOCIATION.

THIRTY-SECOND ANNUAL MEETING, HELD IN WASHINGTON, D. C., MAY 3, 4, 5, 1910.

JAMES E. LOGAN, M.D., *President.*
JAMES E. NEWCOMB, *Secretary.*

(Continued from No. 23, p. 880.)

#### VII. THE INFLUENCE OF THE USE OF THE AUTOMOBILE UPON THE UPPER AIR PASSAGES.

By DR. D. BRYSON DELAVAN, New York.

The wide introduction of the motor vehicle makes it a matter of great human interest as well as economic importance to study its effects upon the physical welfare of the public. Little or nothing has been advanced with regard to its effects upon the upper air passages. The factors which work injury to the air passages may be divided into two groups: (1) Conditions relating to the air itself — temperature, air currents, air pressure; (2) impurities carried by the air — smoke, dust, emanations from plants, and small insects. Under conditions similar to those met with in some forms of automobile riding, as in walking in the face of a blizzard, great harm has been done to the air passages. Dust may be irritating from its mechanical properties as well as from the peculiarities of its nature, and the smoke of the automobile is undoubtedly capable of causing severe irritation to the upper air passages, even in healthy individuals. Where the membranes are already sensitive, as in patients suffering from asthma, bronchitis, tuberculosis, etc., the irritation is all the greater. Mucous membranes already irritated are especially liable to infections of a general nature. Theoretically, therefore, the use of the automobile should increase respiratory ills; whether this has actually resulted is a question.

In using the automobile prudence as to dress, and care should be observed. Chauffeurs might be supposed to suffer more than others, but as a matter of fact, they do not seem to suffer more from throat and lung troubles than others — probably on account of their youth and vigor, and because of the health-giving effects of life in the open air. Certain life insurance companies which formerly made an extra charge against chauffeurs have removed this and now accept them at the usual rate, having apparently found that they are not more liable to life-threatening respiratory diseases than are coachmen. Less serious affections are not noticed in the insurance statistics. Auto riding should be interdicted in acute coryza. Where tendency to involvement of the nasal sinuses exists, automobile riding offers many elements of danger. In chronic sinusitis and old suppurative conditions of the ear, incautious motoring is liable to be injurious. In patients suffering from tinnitus, motoring is often found to be objectionable, and it would seem to be contra-indicated in acute catarrhal conditions. On the other hand, in many subacute and chronic catarrh conditions it seems to be advantageous, and several cases of asthma have been reported as benefited. Prof. James Tyson has maintained that many cases of cardiac disease are markedly benefited by motoring, the fresh air, mild exercise, gentle stimulation of the circulation and mental diversion having an excellent influence; so, in properly selected cases of respiratory troubles, the patients thrive, owing to improved oxygenation and nutrition. It would finally appear that under certain conditions and in certain cases the motorist may expose himself to positive risks unless he exercise proper precaution in the selection of a machine, and wisdom in using it. Properly used, in suitable cases, the automobile may be a valuable therapeutic agent. These things being true, we should by this time have obtained sufficient knowledge to enable us to warn the public of the possibilities of danger and instruct them as to the best means of precaution. In addition to the precautions of a personal nature which those using automobiles should observe, the safety and comfort of the public would be greatly enhanced: (1) By good and well-kept roads; (2) by well-paved city streets kept free from the fine dust which is now allowed to remain after the coarser matters have been removed; (3) by the enforcement of the laws against automobile smoke in our cities, as such laws are enforced in Europe.

DR. E. L. SHURLEY, Detroit, said that living in a city where 60% of all the automobiles manufactured in the world are found, a number of observations have been made by him where the automobile was the etiological factor in the development of conditions in the respiratory tract. An absolutely new occupation has developed within the last few years, that of automobile tester. These men are subjected to the ill-effects of the exhaust pipes for a number of hours each day, and many of them have developed deflections and pathological conditions requiring interference which have not appeared in those following other occupations. The use of the automobile predisposes to the extension of acute conditions that are present, especially the open machine. He has seen a number of cases of wind paralysis with attending ear and throat complications in which the automobile was the particular etiological factor. Another point that develops from the high speed these testers employ is the "automobile face," with the open mouth, and such individuals are subjected to extra dangers of infection.

DR. JOHN O. ROE said that the automobile shield has done more to lessen the dangers from automobiling than any other device, especially cases of frontal sinus disease, induced by air pressure and strong currents, which are less frequent since the adoption of the shield.

DR. WILLIAM KELLY SIMPSON, New York, said that he would like some member to cite definite cases which were dependent upon the automobile.

DR. ROE replied that before the adoption of the wind shield he had a number of frontal sinus cases which were directly traceable to taking cold from the strong

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currents to which the patients were exposed. In reply to a query from Dr. Cohen as to whether he attributed this to the excessive speed employed, he answered in the affirmative.

Dr. Emil Mayer, New York, said that, at a former meeting in Boston, he had reported a number of cases of accessory sinus disease in patients who had used the machine, and had called attention to the automobile as an etiological factor.

Dr. Casselberry, Chicago, said that there was a vagueness in such statements that does not carry conviction. So many people use the automobile nowadays that it would be a very uncertain factor.

Dr. Delavan, closing the discussion, apologized for bringing such a semi-popular paper before the Association, but said that the automobile is capable of doing much harm as well as good. The conditions which interdict its use are not always easy of recognition, and the question should be studied, so that its use may be recommended or discouraged, as the case may be.

### VIII. INTRANASAL ROUTE FOR GROWTHS OF THE HYPOPHYSIS WITHOUT EXTERNAL INCISION, WITH REPORT OF A CASE OF INTRANASAL COMPRESSION.

Dr. Norval H. Pierce, Chicago.

Dr. John Mackenzie, Baltimore, said that his assistant, Dr. West, has been interested in this question for the past year, and had worked out the method on the cadaver in a very clear and practical way, though they had not yet so treated a clinical case. Dr. West was the first to carry out on the cadaver the operation on the hypophysis from the intranasal route, and has published his results in the *Journal of American Medicine*.

Dr. R. G. Myles, New York, said that he had had three cases where the tumor involved the sphenoid, in which it was necessary to remove the septum, and he had been much impressed with the broad field thus obtained for operative procedure.

Dr. T. Gordon Wilson, Chicago, said that Dr. Pierce had reported the subject of this paper before the Chicago Medical Society last year.

Dr. Pierce, closing the discussion, said that he had outlined the operation in November of last year and had sent the paper to the publisher, though through delay on the part of the printer it has not yet appeared. He understood that a man in Vienna had outlined the operation at the International Congress of Budapest. He himself was not contending for the question of priority, but merely wished to present this new subject.

### IX. DIFFERENTIAL DIAGNOSIS OF DENTIGEROUS CYSTS OF MAXILLARY ANTRUM.

Norval H. Pierce, Chicago.

Dr. W. E. Casselberry, Chicago, said that he had been much interested in the paper and the beautiful slides shown by Dr. Pierce, hoping to have clarified a point of diagnosis upon which he had written several years ago, under the title, "Serous Diseases of the Maxillary Sinus." The condition, however, is not yet clear to him. The point for diagnosis is not of cases where there is bulging, but where there is no bulging; as to whether the straw-colored fluid is or is not cystic, whether it is not a primary stage which will become suppurative.

Dr. Cornelius G. Coakley, New York, said that in the early diagnosis of these cases, the precystic state, transillumination does not help a particle. The only way they have been able to diagnose such cases is by having a special x-ray plate with the negative plate placed inside the mouth, in order to get at the floor of the antrum. The information given by such a plate, where there is disease, is absolutely characteristic.

Dr. Pierce, closing the discussion, said that he had not considered the follicular variety of dentigerous cyst in his paper at all. As to the variety spoken of by Dr. Casselberry, the hydrops, the point is whether there is hydrops. When the antrum begins to bulge it is not due to the hydrops *ex vacuo*, but to the dentigerous cyst. He had written a paper describing a case in which a dentist had pulled a tooth, the extraction being followed by a grayish fluid. The patient came to him and he readily washed out the antrum through the antral opening, and the diagnosis was complete. Operation showed a membranous cyst which extended over the cavity.

### PRESENTATION OF INSTRUMENTS FOR DIRECT INTUBATION.

By Dr. H. P. Mosher, Boston.

Dr. John R. Winslow, Baltimore, said that since reading his paper before the Association last year in Boston recording a case of chronic stenosis of the larynx treated by intubation by the direct method, he has treated several other cases in the same way. The method possesses great accuracy and exactitude. Dr. Mosher has improved and enlarged our armamentarium by the method described, which will be of great advantage in cases of chronic stenosis.

Dr. W. K. Simpson, New York, said that he had been much impressed with the presentation of the instrument, and had been glad to hear Dr. Winslow's remarks, for he had been wondering what was the advantage of the direct over the indirect method of intubation. He felt, however, that the same accuracy claimed by Dr. Winslow could be obtained with indirect intubation, for the sense of feeling and touch is very accurate, and in the great majority of cases it is better to operate with the head mirror. He is also inclined to think you can get more pressure by the indirect method. He wished to know if any one had had any experience with this method in children. The time required might be an objection to it.

Dr. Clark, Boston, said that he had used Dr. Mosher's instrument in a case of stenosis of the larynx in a child, and found it very useful in introducing and removing the tube.

Dr. Algernon Coolidge, Boston, said that without discussing the question of the kind of case in which it was the better method, it would seem that one was working less in the dark than when doing it indirectly.

### TECHNIC OF A RADICAL OPERATION UPON THE MAXILLARY SINUS.

Presented by Dr. William L. Ballenger.

1. Incision under infiltration and cocaine anesthesia in the vestibule of the nares along the ridge formed by the naso-antral angle.
2. The periosteum over the anterior wall of the antrum was then elevated.
3. The naso-antral angle was then removed with rongeur forceps until the anterior angle of the antral space was opened on a level with the inferior meatus.
4. The entire naso-antral wall beneath the attachment of the inferior turbinal was removed through the opening at the anterior angle with Wagner forceps. The heavy portion of the mass at the floor of the nose was still further removed with a small chisel and mallet, thus making an opening extending from the extreme anterior angle to the posterior extension of the antrum, and from the floor of the nose to the attachment of the inferior turbinal.

The claims made by the author for this operation

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were: (a) That it is as radical as the Denker operation, since it affords as complete access to the antrum for curettage, treatment and inspection; (b) that it is a much more conservative operation, as it does not injure the inferior turbinal, and may be done with much less loss of blood and under local anesthesia in a few minutes of time.

(To be continued.)

## Book Reviews.

*The Sexual Disabilities of Man and their Treatment.* By ARTHUR COOPER, Consulting Surgeon to the Westminster General Dispensary; formerly House Surgeon to the Male Lock Hospital, London. Second edition, revised and enlarged. New York: Paul E. Hoeber. 1910.

That Dr. Cooper's book should so soon have reached a second edition is evidence that it has been read and appreciated. Though revised and enlarged, the present volume remains, seemingly, as small and readable as the original. Under general treatment, the section on matrimony seems particularly good, but a trifle short-sighted. In this respect the author might have succeeded better had he taken as his motto the quotation: "Let me not to the marriage of true minds admit impediment."

*Cystoscopy as Adjuvant in Surgery.* With an Atlas of Cystoscopic Views and Concomitant Text for Physicians and Students. By Staff-Surgeon DR. O. RUMPEL, Lecturer in Surgery at the University of Berlin. Only authorized English translation by P. W. SHEDD, M.D., New York. With 85 illustrations in color on 36 plates and 22 textual figures. New York: Rebman Company.

This book consists of about sixty pages of text followed by 36 colored plates representing cystoscopic pictures of bladder pathology. The text is divided into eight short chapters as follows: Anomalies, Congenital; Calculi; Cystitis; Foreign Bodies; Hypertrophy of the Prostate; Prostate; Tumors; Testing Renal Function. Each of these chapters contains a brief, practical discussion of the conditions under consideration, with constant reference to the plates which picture these conditions; and really the whole text is little more than an explanation of the plates embodied in the book. The text itself is also well and profusely illustrated. The whole book has for its basis a collection of cases in the writer's hospital and private practice, and as these patients nearly all came to operation, the cystoscopic diagnoses could be confirmed in almost every instance by the operation and by the subsequent histological examination. The plates are beautifully reproduced, representing the actual cystoscopic pictures seen in the series of cases referred to. The book is creditably executed, and while not one to appeal to the general medical public, will be of interest and really valuable to the genito-urinary surgeon and to all students of cystoscopy.

THE BOSTON

**Medical and Surgical Journal.**

THURSDAY, DECEMBER 15, 1910

*A Journal of Medicine, Surgery and Allied Sciences, published at Boston, weekly, by the undersigned.*

SUBSCRIPTION TERMS: *$5.00 per year, in advance, postage paid, for the United States, Canada and Mexico; $6.50 per year for all foreign countries belonging to the Postal Union.*

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## MEDICAL EDUCATION AT HARVARD UNIVERSITY AND ABROAD.

COMPARISONS in educational as in other matters are often useful. It is of particular interest, from time to time, to compare methods of medical instruction as practised abroad with those of the best institutions of this country. In this connection, a painstaking study of conditions as found in various European countries has been made by Prof. L. J. Henderson, of the Harvard Medical School, and a comparison drawn between them and the school in which he is a teacher.

Dr. Henderson found that the Harvard School differs radically in several respects from every institution of medical education in Europe, disregarding Spain, Portugal, Russia, the Balkan States and some others. A striking difference at the outset is the fact that the age qualification for practise in Europe is everywhere lower than at Harvard and institutions of similar standing in this country. As is generally known, the student is permitted in Europe to begin his medical education immediately upon leaving school. The difference, however, in the preparatory schools should be borne in mind before too radical deductions are drawn from this statement. The student in Europe is not required to do work of a non-medical character, with the exception that in some British universities, if he desires an A.B. degree, such work is required in insignificant amounts. Even at Oxford, however, it is very unusual for a student to undertake work of an unnecessary kind unless it be advanced study or research in a natural science. It is, therefore, exceptional in England for students to devote time to outside studies before beginning the practice of medicine. In Europe the rudiments of chemistry, physics and general biology are uni-

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versally required as parts of a medical education. Time given to academic exercises is very much greater here than in Europe, nor do students in Europe spend so many hours in laboratories doing class work in the medical sciences. It is also noticeable that the Harvard Medical School is much more given to examinations covering small parts of the curriculum at frequent intervals.

The individuality of the student is far less developed here than in Europe, as shown by the fact that the first three years of the medical course at the Harvard Medical School, for example, is essentially the same for all students, whereas much more liberty is allowed abroad. As Dr. Henderson expresses it, nowhere in Europe, save in England, is there so much "spoon feeding" as there is here, but in England there appears to be more. Dr. Henderson concludes his observations by the general statement that Harvard students work more, study a great deal less and "cut" less than their European *confrères;* and that Harvard students less often than Germans, Austrians, Swiss and Dutchmen undertake work of an unusual character, such as physiological research, advanced courses in pure chemistry and the like.

## SOME ASPECTS OF HEREDITY.

Heredity has at all times been a rather alarming, and at some times a terrible, word. In the early days, when it was first given general scientific currency by Darwin and his contemporaries, it acquired a connotation of baneful significance, as if representing a cumulative curse bequeathed from one generation to another. Diseases, deformities and evil tendencies of all sorts were described as hereditary, until most of the laity and many physicians came to think of heredity as a malign Dagon from whose predestined doom none could hope to escape.

Following the demonstration that tuberculosis is not a directly heritable disease, there was somewhat of a reaction from this fatalistic view, and some came even to regarding heredity as of no importance at all. Doubtless the truth lies midway between these attitudes, but at the present time there seems still a tendency to overemphasize the gloomy side of the prospect.

It is probably true that the mental and nervous instability which predispose to insanity are heritable, that susceptibility to cancer, to diabetes, to tuberculous and other infections are heritable. Nevertheless it should be remembered that insusceptibility and immunity, relative or absolute, are probably also heritable, and that there is probably a blessed tendency to the self-eradication of defects. For experiments in breeding show that, on the whole, offspring do not often inherit a defect from one parent. Only when there is the same defect in both does hereditary transmission become the rule. If it were not for this, our poor human race would long since have succumbed to disaster.

Heredity is really our friend; it helps us more than it harms. The newly established science of eugenics may be described as the science of applied heredity, whereby we may hope deliberately to aid and hasten the results that are being blindly but unerringly worked out by time. Medically, heredity should never be used as a bugaboo to scare the timid with horrible prospects of inevitable misfortune. It should be presented not as a demon, but as a kindly, though sometimes stern, guardian. To heredity one generation owes what is good in it; it owes to posterity the transmission of that good augmented by the same agent. Heredity is the silver cord that links the ages of man through his evolution, that leads from the shrine of animalculate existence to perfections as yet unimagined.

## CONTINUANCE OF DROUGHT IN MASSACHUSETTS.

In several issues of the Journal this fall we noted the prevalence of drought in Massachusetts, and the imminence of water famine in various towns of the state. This situation was temporarily somewhat relieved by the rainfall of last month, but the advent of freezing weather prevented much of this rain from reaching reservoirs where it could be available for drinking purposes during the winter. The precipitation of the year is now fourteen and one-half inches short of the normal annual average. The towns at present most seriously affected by the deficiency are Salem, Athol, Whitinsville, Palmer, Monson, Montague, Milford, Westboro, Greenfield and Belchertown. In certain places in Maine and New Hampshire also there is shortage of water for bathing and drinking and for watering cattle; and several mills near Manchester, N. H., and at Milford and Stillwater have been obliged to shut down for lack of power. This failure of water-supply throughout New England may perhaps be only a coincidence, or may represent the result of far-reaching causes. It is a situation which demands earnest consideration on the part of publicists as well as of water commissioners and boards of health.

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## PROSECUTION OF THE ORDINANCE AGAINST SPITTING.

THERE seems a determined intention on the part of the Boston Police Board to enforce rigorously the municipal ordinance against promiscuous public expectoration. During the first seventeen days of the recent special enforcement of this law, 459 persons were arrested for spitting. At first a fine of $2 was usually imposed. Later, as there seemed to be no cessation in the amount of spitting, the fine was increased to $5. One man, arrested for a second offense, was fined $10; and one who refused to pay his fine, though able to do so, was sentenced to eight days in the House of Correction. Of the 459 persons arrested, only 1 was a woman; 283 were men between twenty and forty; only 2 were juveniles; 205 were married and 254 single, though it seems questionable whether this should be taken as corroborative evidence of the supposed disciplinary value of matrimony or of the fact that "single men in barracks don't grow into plaster saints." In any event, persistence in the present laudable campaign seems indicated, for the latest general order from police headquarters concludes as follows:

"All members of the force, and especially division commanders, are to understand that the enforcement of this law is to be thorough and continuous. Signs of its violation in any particular section of the city will be regarded as evidence of inattention to duty on the part of the police responsible therefor."

## EPISODES IN THE SUPPRESSION OF THE ILLEGAL SALE AND USE OF DRUGS.

THREE prisoners were arraigned before the Boston Municipal Court last week on the charge of selling drugs illegally. Two sold opium and one cocaine. The cases were all continued, and the defendants held in $500 bail each. Four other men were also arrested in Boston last week on a charge of selling morphine illegally and one for selling opium. In this connection it is interesting to note that in Pittsburg, Pa., a man, arrested because an opium outfit was found in his house, has made the defense that it was solely for his own use and that the police have no authority to interfere with his addiction to the drug.

The decision in this case may prove an important precedent as to the right of an individual to practise the use of a deleterious drug. The once divine right of every man to go to the bad in his own way, provided he harm no one else, has come in question like the anointed authority of kings. The real fact of the issue is that all individual wrong doing, whether moral or hygienic, does harm others, who, therefore, have a right to undertake its inhibition.

## MEDICAL NOTES.

A CENTENARIAN. — Mrs. Bridget Mahar, who died last week at Hampton, N. Y., was locally reputed to have been born in 1805. She came from Ireland to the United States as a young girl and had been a resident of Hampton for over sixty years. She is survived by one daughter and one son.

OPENING OF A NEW HOSPITAL IN ST. LOUIS. — It is announced that the new building of the Barnard Free Skin and Cancer Hospital at St. Louis, Mo., has been completed and will be opened for inspection on Tuesday, Dec. 20.

PLAGUE IN MANCHURIA. — It is reported from Harbin that the epidemic of bubonic plague in Manchuria is rapidly spreading and that many physicians are being sent by the government from Siberia to attempt its suppression. Traffic with China has already been restricted and may be suspended in the effort to check extension of the infection.

FIRE MENACES A CANADIAN HOSPITAL. — News from Winnipeg, Canada, states that on account of fire in a neighboring lumber mill, which menaced Stroch's Hospital in that city, 80 patients in the hospital were safely moved to another institution. The thermometer at the time was sixteen degrees below zero.

DEPORTATION OF HINDUS FOR UNCINARIASIS. — It is reported from San Francisco, Cal., that of 15 Hindus who reached that port on Dec. 11 on the steamer *Manchurian*, 11 were found to have uncinariasis and were, therefore, ordered by the local medical inspector to be immediately deported.

TYPHOID FEVER AT ANNAPOLIS. — During the week ending Dec. 10, five more new cases of typhoid fever were reported among students in the United States Naval Academy at Annapolis, Md., making a total of twenty-nine cadets now ill with the disease. There have as yet been no fatalities. It is believed that these new cases are derived from the original source of infection, not from other cases that developed earlier after a shorter period of incubation.

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Medal Awarded to Dr. Wiley. — Report from Philadelphia states that the Franklin Institute of that city has recently awarded to Dr. Harvey N. Wiley, chief chemist to the Department of Agriculture, an Elliott Cresson medal for "distinguished, leading and directive work in the fields of agricultural and physiological chemistry."

Provision of Rank for Naval Dentists. — In the issue of the Journal for Oct. 27, we commented editorially on the lack of suitable recognition, by the United States government, of dentists in the army and navy. Report from Washington, D. C., states that the House Committee on Naval Affairs has recently reported favorably "a bill entering members of the dental corps as acting assistant surgeons, with provision that after eleven years' service there may be developed from them automatically one lieutenant commander, four passed assistant surgeons and twenty-five assistant surgeons. This bill, if enacted into law, should seem to provide the desired recognition in rank foı dentists in the navy, and presumably similar provision in the army might be expected to follow.

The Free Lunch Problem in Schools. — In last week's issue of the Journal we commented on the questionable desirability of furnishing free lunch to public schoolchildren. It is stated that in the open-air school at Indianapolis, Ind., pupils are required to pay three cents each a day for the hot milk, soup or cocoa with which they are supplied, the balance of the cost being paid by the school department. It would seem that in any project for feeding schoolchildren, whether tuberculous or healthy, at least half the expense should be met by the children or their parents, though it is also questionable whether the acceptance of such a half-charity be not as destructive to self-reliance and self-respect as that of a complete bounty or subsidy.

Food Poisoning in Germany. — Report from Berlin states that an entire family of seven persons has recently died at Grandenz, Prussia, of supposed poisoning from impure food, and that during the first week in December there were several hundred cases of similar poisoning in Düsseldorf and Hamburg, with several fatalities in the latter city. It is alleged that a consignment of artificial butter manufactured from rancid French fat was the cause of these poisoning cases. In this explanation, however, there might seem a possible suggestion of racial animus. Any one who has had experience of the German custom of eating raw ham and sausages would not be surprised if this abominable gastronomic usage were proved to be the real source of the trouble.

The Cholera Epidemics. — During the week ending Dec. 10, 29 new cases and 11 deaths of Asiatic cholera were reported from Italy, as against 27 cases and 3 deaths the preceding week. Palermo in Sicily seems now to be the residual center of the infection in that country.

The epidemic of cholera in Madeira, to which we referred in last week's issue of the Journal, has apparently reached considerable proportions. Advices from Funchal, the capital of the island, state that the total number of cases is now 422, of which 136 have died. Riots are said to occur daily, and there is great destitution on account of the cessation of business. It is reported from Lisbon, Portugal, that the Portuguese gunboat *Zaire* has been despatched from that city to Madeira with food supplies, troops and medicines.

## BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston.— For the week ending at noon, Dec. 13, 1910, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 53, scarlatina 34, typhoid fever 14, measles 17, smallpox 0, tuberculosis 51.

The death-rate of the reported deaths for the week ending Dec. 13, 1910, was 16.18.

Boston Mortality Statistics. —The total number of deaths reported to the Board of Health for the week ending Saturday, noon, Dec. 10, 1910, was 226, against 203 the corresponding week of last year, showing an increase of 23 deaths and making the death-rate for the week 17.49. Of this number 118 were males and 108 were females; 218 were white and 8 colored; 124 were born in the United States, 99 in foreign countries and 3 unknown; 42 were of American parentage, 158 of foreign parentage and 26 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 62 cases and 1 death; scarlatina, 31 cases and 2 deaths; typhoid fever, 16 cases and 4 deaths; measles, 18 cases and 1 death; tuberculosis, 51 cases and 15 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 41, whooping cough 0, heart disease 35, bronchitis 4. There were 14 deaths from violent causes. The number of children who died under one year was 33; the number under five years 50. The number of persons who died over sixty years of age was 69. The deaths in public institutions

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were 88. Cerebrospinal meningitis, 1 case and 2 deaths. Acute anterior poliomyelitis, 1 death.

Of the above infectious diseases the following were non-residents: Consumption, 1 case. Diphtheria, 1 case. Scarlet fever, 3 cases and 1 death.

Deducting deaths of non-residents, the total is 208 and the death-rate is then 16.10.

CHARITABLE BEQUEST TO A HOSPITAL. — The will of the late Lucretia Dyer, of Randolph, Mass., allowed for probate in court last week at Dedham, Mass., bequeathes her savings-bank deposit to the New England Hospital for Women and Children, Boston.

RECOMMENDED APPROPRIATION FOR CITY HOSPITAL. — The trustees of the Boston City Hospital have recently recommended an additional loan appropriation of $297,800 for the construction of new buildings, and changes and other improvements in the South Department for contagious diseases.

SCARLET FEVER IN HULL. — Six cases of scarlet fever have recently developed among children at Hull, Mass. To prevent spread of the epidemic, the village school has been ordered closed and fumigated and the school-books destroyed. Civilians of the town have been forbidden to enter the government fortifications in the vicinity lest they communicate the infection to the troops stationed there, and members of the garrison have been warned not to mingle in crowds in the town or to go skating on the local pond.

CONVICTIONS IN SALE OF MILK AND VINEGAR. — Before the Boston Municipal Court last week, seven local milk dealers were fined from $10 to $30 for selling milk without a license, most of them after having had their licenses revoked for previous infraction of law relative to sale of milk. Four other dealers were convicted of having for sale milk not up to the required standard, and were fined $10 each. Two were fined $10 each for putting coloring matter in vinegar. Another dealer was charged with having in possession with intent to sell milk not up to the standard, but his case was continued for further hearing.

Before the Malden District Court a large contractor was fined $100 last week for having milk below the standard. In defense his attorney averred that the milk was to be mixed, before sale, with richer milk which should bring the whole up to the standard.

NEW YORK.

RECOMMENDATION FOR ORGANIZATION OF AN AMBULANCE COMPANY. — Among other recommendations of the State Militia Council which Governor White approved on Dec. 2 was one for the organization of an ambulance company at at Albany, to be attached to the National Guard headquarters.

A CENTENARIAN. — Josiah Zeitlein, of Brooklyn, N. Y., said to be the oldest man in that borough, died on Dec. 1 at the age of one hundred and six years. He was born in 1804 in Lodz, Poland, and is stated to have been living with his parents in Moscow when in 1812 the Russians burned that city on the advance of Napoleon. He retired from business in Moscow thirty years ago and came to reside with a son-in-law in Brooklyn. He leaves three sons, the oldest of whom is seventy-six, and fifteen grandchildren. The old man was quite active physically up to the time of his death, and, occupying a room on the top floor of the four-story house, he would each night climb unaided the three flights of stairs. It is related of him that he was accustomed to rise early every morning and, after swallowing some tea, would take several drinks of whiskey, smoke two pipefuls of tobacco, and then go back to bed. Later in the day he would get up again and repeat the performance. He is reported to have attributed his longevity to moderation in these and in all other things.

SPECIAL MILK CONFERENCE. — A special conference on milk was held on Dec. 2 and 3, on the invitation of the New York Milk Committee, and there was a large attendance of sanitarians, as well as milk producers and dealers. Among those present were Prof. W. T. Sedgwick, of the Massachusetts Institute of Technology; Dr. J. W. Kerr, Assistant Surgeon-General, U. S. Public Health and Marine-Hospital Service; Dr. W. A. Evans, Health Commissioner of Chicago; Dr. John Amyot, Health Officer of Toronto; Dr. G. L. Magruder, of Washington; and Dr. Henry L. Colt, of Newark, N. J. John P. Mitchell, President of the New York Board of Aldermen, opened the conference with an address in which he alluded to the large death-rate in infants. He said that the city authorities were anxious to do all in their power to save the children, and finally submitted fourteen questions which, he stated, the Board of Estimate desired to have answered in order to be able to act intelligently in the mat-

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ter. There was considerable discussion and much difference of opinion on the matter of pasteurization, and a resolution calling for general pasteurization was tabled. Deputy Attorney-General Coleman advocated the establishment of a non-partisan State Milk Commission, the members of which should be appointed by the governor on the recommendation of milk committees and boards of trade. At present, he said, there was no way of controlling combinations among the large milk companies, and among the other functions of the commission should be the fixing of the minimum price for the producer and the minimum price to the consumer. The New York Milk Committee, which has for its principal objects the improvement of the milk supply of the city and the education of the public in the proper use of milk for infant feeding and other purposes, has decided to call a similar conference annually.

## Current Literature.

### Medical Record.

Dec. 3, 1910.

1. *Clarke, T. W., and Curts, R. M. *Sulph-hemoglobinemia, with a Report of the First Case in America.*
2. Magnus-Levy, A. *Chemical Problems in Diabetes.*
3. Neff, M. L. *Occupation as a Therapeutic Agent in Insanity.*
4. Evans, W. A. *Ventilation of Cars.*
5. Holmes, B. *Diagnosis and Treatment of Osteal Tuberculosis without Abscess Formation.*
6. Cocks, E. L. *The Treatment of the More Common Diseases of the Skin.*

1. Clarke and Curts report a case of sulph-hemoglobinemia, or idiopathic enterogenous cyanosis, as it is sometimes called. This rare condition is probably due to the absorption of an excess of sulphuretted hydrogen from the bowel and can generally be cured by systematic purgation. Suph-hemoglobin is a purple pigment, distinguished from methemoglobin by the spectroscope. Both methemoglobin and sulph-hemoglobin give a black absorption band in the red of the spectrum. The addition of a drop of dilute ammonium sulphide removes the band of methemoglobin, but has no effect on that of sulph-hemoglobin. In both methemoglobinemia and sulph-hemoglobinemia the striking symptom is cyanosis unaccompaned by dyspnea or other signs of cardiac or pulmonary disease. Methemoglobinemia usually occurs in men with chronic enteritis; sulph-hemoglobinemia in constipated women. If the patient is put on a strict milk diet, methemoglobinemia disappears within forty-eight hours. No such effect is produced in sulph-hemoglobinemia. [L. D. C.]

### New York Medical Journal.

Dec. 3, 1910.

1. Woodbury, F. T. *Iodine.*
2. Bierhoff, F. *Concerning the Protest by the Committee Representing Various Women's Clubs against Paragraph 79 of the Bill Relating to the Procedures of the Lower Courts of the City of New York.*
3. Blackburn, I. W. *Hypernephroma.*
4. Buerger, L. *The Operative Technic of Cysto-urethroscopy.*
5. Jackson, J. A. *Report of a Case of Hypernephroma.*
6. *Runnels, S. C. *The Carbon Compounds of Arsenic in the Treatment of Syphilis.*
7. Knott, J. *Centenarians.*
8. Sawyer, H. C. *The Treatment of Diabetes Mellitus.*
9. Stimson, C. M. *Cholelithiasis.*
10. Yawger, N. S. *Cocaine Intoxication.*

6. Runnels concludes an exhaustive article on the use of the carbon compounds of arsenic in syphilis. He is particularly impressed with the value of pure sodium cacodylate in many cases. This has several decided advantages over Ehrlich's "606" — it is accessible to all in the United States; it is inexpensive; its injection is not painful; it is more stable; it contains a greater percentage of arsenic, and all the arsenic in it is absorbed. [L. D. C.]

### The Journal of the American Medical Association.

Dec. 3, 1910.

1. *Reynolds, E. *Etiology of Ptoses and Their Relation to Neurasthenia.*
2. Rennie, W. H. *Relation of Recruiting to Preventive Medicine.*
3. *Kaplan, D. M. *Conservative Utilization of the Wassermann Reaction.*
4. Stern, H. *The Colonoscope.*
5. Weissenburg, T. H. *Exophthalmos in Brain Tumor, with Report of Eight Cases.*
6. Langdon, F. W., and Kramer, S. P. *Brain Tumor of Psychomotor Area Causing Jacksonian and Generalized Convulsions, Visual Hallucinations, Somatic Delusions, Astereognosis and Hemiplegic Paralysis. Operation; Recovery, Mental and Physical.*
7. Grinker, J. *Three Cases of Tumor in the Cerebello-Pontile Angle.*
8. Hoppe, H. H. *The Topographic Diagnosis of Subtentorial Brain Tumors.*
9. Marks, L. H. *Ehrlich's Biochemical Theory; Its Conception and Application.*
10. Richardson, W. W. *A Case of Torsion of the Great Omentum.*
11. Miller, R. T. *Myiasis Dermatosa Due to the Oxnarth Flies.*
12. Wright, J. H. *Revised Directions for Making and Using the Wright Blood-Stain.*

1. Reynolds brings out and emphasizes many important points in treating of the etiology of ptoses and their relation to neurasthenia. He does not believe that the spontaneous relaxation of the supports of some one organ is anywhere near as common as supposed, but that muscular relaxations are always general in their character. Rapid loss of fat is by far the most important element in the causation of this class of cases in which ptosis is the result of purely passive lengthening of the normal supports. In this class of cases operative treatment is almost never indicated. Most of the operative failures are due to the adoption of routine operative measures without determining the cause of the individual ptosis. One of the greatest causes of ptosis is the round-shouldered, hollow-backed attitude which allows of intestinal pressure on the uterus, forcing it backward. In these cases rectification of incorrect posture is the first step, and this is often best done by the proper therapeutic corset instead of by the complicated brace. In nephroptosis, belts and pads to make direct pressure on or below the prolapsed kidney are less effective than a corset which exerts the proper abdominal pressure and support throughout the whole abdomen. One of the most common of the pelvic ptoses are infections of the Fallopian tubes which drag the uterus out of position by adhesive bands.

3. Kaplan believes that only 66 to 88% of tabetics are syphilitic. In patients in the active forms of the disease with a negative Wassermann reaction, mercury did no good, and in some cases harm. The disappearance of the Wassermann reaction from a case of syphilis can only

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be taken as a favorable sign, provided the clinical manifestations go hand in hand. The laboratory report on a Wassermann should always be collated with the clinical findings in each case. [E. H. R.]

THE ARCHIVES OF INTERNAL MEDICINE.

NOVEMBER, 1910.

1. MACRAE, T., EISENBREY, A. B., AND SWIFT, H. F. *The Use of Pure Lipoids and Alcoholic Extracts with Active and Inactive Serum in the Complement-Fixation Tests for Syphilis.*
2. PEARCE, R. M. *The Wassermann Reaction in the Pathology, Diagnosis and Treatment of Syphilis.*
3. HERRICK, J. B. *Peculiar Elongated and Sickle-Shaped Red Blood Corpuscles in a Case of Severe Anemia.*
4. *HESS, A. F. *The Elimination of Bacteria from the Blood through the Wall of the Intestine.*
5. MACE, L. S. *Experimental Lung Anthracosis.*
6. *SWEET, J. E., AND PEMBERTON, R. *The Induction of Pancreatic Activity by the Removal of the Adrenals.*
7. *BROOKS, H. *A Case of Fatal Sodium Chloride Poisoning with a Brief Study of the Effects of the Excessive Administration of Salt on the Tissues.*
8. *JANEWAY, T. C., AND PARK, E. A. *An Experimental Study of the Resistance to Compression of the Arterial Wall.*
9. HIRSCHFELDER, A. D. *Cutaneous Tests with Corn Extracts in Pellagrins.*

4. Hess injected small quantities of Bacillus prodigiosus into the veins of dogs and rabbits, after having tied off and severed the intestine below the entrance of the biliary and pancreatic ducts, and within a few hours recovered the bacillus from the small intestine. The bile, he found, always contained many bacilli, the urine a few, the pancreatic juice practically none.

6. Sweet and Pemberton are conducting a series of experiments regarding the relation of certain ductless glands to pancreatic activity. Since removal of the adrenals causes marked increase in pancreatic secretion, they hold that these glands exercise an inhibitory influence upon the pancreas. There is some evidence to show that the mechanism of this phenomenon has to do with the increase of prosecretin in the duodenum.

7. Brooks reports the case of a young woman, operated upon for chronic appendicitis, who died as a result of receiving by mistake enemata amounting to 9 oz. of concentrated "stock solution" sodium chloride. By putting into the stomachs of rabbits a large dose of the same kind of solution, he obtained similar clinical symptoms. Autopsy showed great concentration of blood, with dryness of some organs, notably the central nervous system, and edema of others. The intestines contained much gelatinous lymph. Brooks suggests that the cerebral symptoms in cholera and other dessicating diseases, and in some cases of poisoning by over-heavy dosage with Epsom salts, may be caused in the same manner.

8. Janeway and Park, from a study of the resistance of arterial walls to pressure, conclude that for clinical purposes the resistance even of atheromatous vessel walls causes an error of no more than 10 mm. Hg. They advise reading the manometer at the moment of return of the pulse wave after compression rather than at that of its disappearance. [G. G. S.]

ANNALS OF SURGERY.

NOVEMBER, 1910.

1. *WALKER, J. W. T. *Atony of the Bladder without Obstruction or Signs of Organic Nervous Diseases.*
2. *BOTTOMLEY, J. T. *Certain Congenital Strictures of the Ureter.*
3. CUMSTON, C. G. *Primary (Congenital) Hydronephrosis.*
4. *BRAASCH, W. F. *Recent Developments in Pyelography.*
5. HAGNER, F. R. *Note on Removal of Carcinoma of the Fundus of the Urinary Bladder.*
6. TENNANT, C. E. *Intraperitoneal Cystotomy.*
7. KELLY, H. A. *A Chart to Aid in the Treatment of Cystitis by Distentions of the Bladder.*
8. MURRAY, R. W. *Is the Sac of a Femoral Hernia of Congenital Origin, or Acquired?*
9. WIENER, J. *Silver Wire and Linen Thread for the Cure of Hernia.*
10. BUNTS, F. E. *A Pneumatic Tourniquet.*
11. *THOMAS, J. L. *The Control of Hemorrhage by Means of Forceps Tourniquet in Major Amputations.*
12. CORNER, E. M. *Figures about Fractures and Refractures of the Patella.*

1. Walker presents twelve cases of atony of the bladder in which there were no signs of organic disease of the nervous system, in which the urethræ were unobstructed and in which the prostates were healthy. The stream of urine did not start promptly and was feeble, often intermittent and sometimes projected only by forced efforts of the abdominal muscles. In one case the urine escaped on coughing. In four cases there was chronic distention of the bladder. Most cases showed a residual urine (4–10 oz.). All cases showed a marked trabeculation of the bladder, usually the lateral walls, occasionally universal (except the trigone). The trabeculation differs from that of an obstructed bladder in that the muscular ridges are fine, evenly set, and with regular branchings rather than thick, irregular and with uneven branchings, and the interspaces are shallow and usually saucer-shaped rather than deep and narrow. Walker believes this trabeculation is a hypertrophy of intact muscle-bundles subsequent to a primary atrophy of a greater or less number of muscle bundles dependent upon some lesion of the sympathetic reflex center.

2. Bottomley places on record a congenital complete stricture of the left ureter one and a half inches above the bladder, in a boy of six. The hypernephrotic kidney and its ureter dilated to the size of a small intestine were successfully removed. He has collected and epitomized 55 other cases, 17 showing protrusion into the bladder, and the remainder without such protrusions. The paper is a comprehensive study of congenital ureteral strictures, partial, complete or accompanied by aplasia (imperfect development), which open, or were evidently intended to open, into the urinary bladder. Sex had no particular influence. The defect may be immediately incompatible with life, may soon become so, may remain latent a greater or lesser period until infection occurs, or may exist unsuspected during life and be found at autopsy after death from other causes. Forty-five cases occurred in single ureters, 11 in supernumerary ureters. With the exception of great rareties, the stricture in single ureters is usually in or very close to the bladder. The blind end at the stricture may be just beneath the bladder mucosa, in the bladder muscle layer, or may just reach the outer bladder wall (rather unusual). The ureter is almost invariably dilated, thin-walled (rarely thick), and tortuous (perhaps having appearance of string of sausages). Hydronephrosis of varying degree is the rule, but marked primary atrophy may result from strictures of the same location and character. Some cases are symptomless. Other cases present so varied a symptomatology that no single symptom or symptom-complex definitely indicates the condition. The urine is usually negative, although hematuria may occur.

4. Braasch presents the results of further studies in pyelography. He usually uses a 10 to 15% collargol solution. Dilated pelves are beautifully demonstrated, even when the catheter does not pass the etiologic ureteral obstruction, for in such cases enough collargol can frequently be injected past the obstruction to outline the pelvis quite definitely. The site of obstruction is furthermore shown. A pelvis dilated from mechanical obstruction casts a regular shadow — even lines of the pelvic wall and rounded ends of the dilated calyces. An inflammatory pelvis casts an irregular shadow, often associated with detached shadows from cortical abscesses connected with the pelvis. A tumor may distort the pelvis by retraction, in which case the pelvis may be irregularly large or a single calyx may be distended even three or four inches, or the ureteropelvic juncture may be abnormally broad or square. A tumor may distort the pelvis by encroachment, in which case only narrow slits may persist or complete obliteration may occur. In possibly a third of the cases of renal tumor the pelves may not be sufficiently distorted to produce distinctive shadows. Braasch has found pyelography valuable, also, in the differentiation of abdominal tumors, extrarenal and renal shadows; in horseshoe, median-lying

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and solitary kidneys; in cystic kidney; in hydro-ureter; and in ascertaining renal functional capacity.

11. Thomas reports further success with his forceps-tourniquet first described in 1898. The instrument is somewhat similar to Doyen's stomach-clamp. One blade, the internal, has rounded edges and tip. The other blade is roughened to prevent slipping and has a shoulder to prevent compressing the skin near the articulation of the blades. In amputating at the hip a stab puncture is made just below the anterior superior spine of the ilium, through which the internal blade is forcibly pushed toward the neck of the femur in a direction parallel to Poupart's ligament. The leg is exsanguinated as much as possible by vertical elevation. The forceps is then clamped, effectually and simultaneously compressing the femoral vessels. Upon turning up the anterior flap the vessels are seized with hemostats and the clamp removed. Vessels in the posterior flap are controlled by applying the clamp behind the neck of the femur. [T. W. H.]

SURGERY, GYNECOLOGY AND OBSTETRICS.

NOVEMBER, 1910.

1. ALESSANDRI, R. *Tuberculosis of the Body of the Uterus Confined to the Myometrium.*
2. SIELIGMANN, G. *Thrombosis of Pelvic Veins following Septic Abortion. Extirpation. Recovery.*
3. *CROUSE, H. *Tumors and Retention Cysts of the Appendix.*
4. ELSE, J. E. *Further Studies in the Etiology of Cholecystitis.*
5. HERRICK, A. B. *Abscess of the Liver. A Study of Forty-seven Cases of Abscess of the Liver, with Special Reference to the Diagnosis, Prognosis and Treatment of the Individual Cases.*
6. POLK, W. M. *The End Results of Surgical Operations for Relief of Neurasthenia Associated with the Various Visceral Ptoses.*
7. STAEHLIN, E. *A Contribution to the Study of Blood Supply of the Liver. With the Report of an Illustrative Case.*
8. *QUINBY, W. C. *Surgery of the Thorax. Intratracheal Insufflation by the Method of Meltzer and Auer.*
9. CRUMP, W. G. *A New Oil in the Treatment of Postoperative Adhesions.*

3. Crouse considers that the diagnosis of malignant disease of the appendix is practically never made before operation or autopsy. The symptoms are those of appendicitis. The disease, however, is not rare. Simple removal of the appendix generally effects a cure, particularly in the sphenoidal cell type. The growth is generally found as a small hard nodule at the distal end of the organ. Many authors comment on the early years at which this disease is found. The prognosis, with removal before any extension has occurred, is excellent.

8. Quinby's paper on intratracheal insufflation is most interesting and practical, illustrating an entirely new and simple means of preventing operative pneumothorax. It takes advantage of the principle of internal respiration, and by means of a properly loosely fitting soft rubber tube introduced nearly to the bifurcation of the trachea, a continuous interchange of oxygen and carbon dioxide is effected without the necessity of the respiratory movements of the lungs or the chest wall. The patient is breathed for instead of breathing. By this method the interchange of oxygen is so perfect that it is impossible to over-etherize a dog with the intratracheal tube working. It also does away with the very cumbersome and expensive differential pressure cabinets and chambers. It is a method which is simplicity itself and deserves thorough trial by many workers and surgeons. [E. H. R.]

THE LANCET.

NOV. 5, 1910.

1. ALLBUTT, C. *FitzPatrick Lectures on Greek Medicine in Rome. Lecture I.*
2. GLYNN, T. R. *The Traumatic Neuroses.*
3. *MORISON, R., AND DRUMMOND, H. *Desmoid Tumors.*
4. BOUSFIELD, E. C. *Notes on Some Cases Treated by Vaccines of Unknown Organisms.*
5. *BOUTOR, S. *Primary Acidosis; Recovery.*
6. HERNAMAN-JOHNSON, F. *The Use of the Faradic Current in the Treatment of Persistent Aphonia following Laryngitis; Two Cases.*
7. CURTIS, J. C. *Notes on a Case of Phlegmasia Alba Dolens, followed by Pulmonary Embolism and Infarction of the Lung. Recovery.*
8. SMITH, H. L. *The Influence of Quinine and Morphia upon Phagocytosis.*
9. HIRSCH, C. T. W. *The Motor Exhibition at Olympia, London.*

3. Morison and Drummond describe an interesting and rare class of fibrous tumors which occur in the muscles or muscular fasciæ of the abdominal wall which possess certain characteristics apart from fibromata elsewhere. Such tumors they call "desmoid tumors." They are rarely found in connection with other muscles. Their association with pregnancy is so frequent as to constitute more than a coincidence. Possibly traumatism, by muscle stretching or tearing, is of etiologic significance. A firm but not tender sausage-shaped tumor with some mobility across, but not in the direction of the fibers of the relaxed muscle with which it appears to be associated, fixed when the muscle is made tense, and occurring in a woman recently pregnant, is a desmoid tumor. The treatment is immediate excision.

5. Boutor gives the details of an interesting case of primary acidosis. The rarity of this condition and the difficulties of differential diagnosis make the report of the case of some value. [J. B. H.]

BRITISH MEDICAL JOURNAL.

NOV. 5, 1910.

1. BRUNTON, L. *The Clinical Measurement of Diastolic Blood Pressure and Cardiac Strength.*
2. ALLBUTT, T. C. *The FitzPatrick Lectures on Greek Medicine in Rome.*
3. CRESSY, A. Z. C. *A Bad Case of Strangulated Omental Hernia, with Very Few Symptoms.*
4. HOBBS, R. A., AND SHEAF, E. W. *A Case of Tetanus Treated by Chloretone.*

BRITISH MEDICAL ASSOCIATION.

*Section of Pathology.*

5. SHATTOCK, S. G. *Introductory Remarks by the President.*
6. MOTT, F. W. *The Nervous System in Chronic Alcoholism.*
7. *WILLCOX, W. H., AND COLLINGWOOD, B. J. *The Therapeutic Use of Alcohol Vapor Mixed with Oxygen.*
8. GLYNN, E., AND KNOWLES, R. E. *Some Observations on Fatal Cases of Pulmonary Tuberculosis.*
9. ACHARD, C. *A Method of Distinguishing Dead from Live Leucocytes.*
10. HICKS, J. A. B. *The Effects of Artificial Respiration on the Stillborn.*
11. PRICE-JONES, C. *The Variation in the Sizes of Red Blood Cells.*
12. *WARD, G. R. *Polychromasia and the Pathology of Hematomata.*
13. BOYCOTT, A. E. *The Action of Oleic Acid and Its Soaps on the Blood.*
14. ADDIS, T. *The Pathogenesis of Hereditary Hemophilia.*
15. BECKTON, H. *On the Absence of Altmann's Granules from the Cells of Malignant New Growths.*
16. GOODHART, G. W. *Chloroform Necrosis of the Liver.*

*Combined Sections of Pathology and Bacteriology.*

17. WASSERMANN, A. *The Diagnostic Use of the Complement Fixation Method.*
18. BAYLY, H. W. *The Practical Value of the Wassermann Reaction.*
19. MUIR, R. *The Fixation of Complement in General.*
20. SMITH, J. W. *On the Structure of Complement in Relation to Deviation.*
21. BASSETT-SMITH, T. W. *The Diagnosis of Syphilis by the Complemental Deviation Method.*
22. MCKENZIE, I. *Individual Properties of Complement and Organ Extract.*
23. DEAN, H. R. *Comparison of the Original Wassermann Method with Some of Its Modifications.*

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24. HARRISON, L. W. *The Guidance afforded by Complement Fixation Methods.*
25. BROWNING, C. H. *Lecithin and Cholesterin as Reagents for the Detection of Syphilitic Serums.*
26. BARRATT, J. O. W. *Complement Deviation in Relation to Carcinoma.*

7. Willcox and Collingwood, after a careful study of the therapeutic effects of alcohol vapor mixed with oxygen, conclude (1) that oxygen bubbled through absolute alcohol is a marked cardiac stimulant in cases of heart failure, and that it is pleasant and non-irritating, causing no ill-effects to the lungs or bodily system. (2) A rapid feeble pulse is slowed by some ten to twenty beats with marked improvement in its force and volume. The blood pressure is raised from 10–30 mgm. The full effect is obtained after five minutes and lasts for several minutes afterward; as it passes off it should be repeated.

12. Ward describes certain studies he has made, which go to show that the phenomenon occasionally seen in blood known as polychromasia or polychromatophilia is a regenerative one and not degenerative. All normal blood is potentially polychromatophilic, only under certain stimuli these cells are more in evidence. [J. B. H.]

DEUTSCHE MEDIZINISCHE WOCHENSCHRIFT. No. 45.

Nov. 10, 1910.

1. JUNG, H. *Vaginal Methods of Aid in Delivery.*
2. SCHRÖDER, G. *Treatment of Laryngeal Tuberculosis.*
3. FRIED, R. *Cure of Tubercular Pneumothorax Spontaneously after Six Months.*
4. PERNICE. *Cancer of the Esophagus High Up and Its Treatment.*
5. *FRANKENSTEIN, K. *Critical Observations on the Use of Subcutaneous Salt Infusion in Eclampsia.*
6. FRAENKEL, E. *Treatment of Eclampsia according to Stroganoff.*
7. LOEWENTHAL, S. *Method of Measuring and Unity in Biological Radium Research.*
8. SCHINDLER. *Question of the Treatment of Myoma with Roentgen Ray.*
9. BAUER, H. *An Objective Härtemesser with an Index Scale for Roentgen Ray Management.*
10. SCHALL, M. *New Technical Devices in the Field of Medicine.*

5. Frankenstein mentions the fact that in kidney disease a salt-free diet is urged. In eclampsia, when there is evidence in the urine of kidney disease, it is frequently advised to give enormous quantities of salt solution intravenously or subcutaneously. He asks, Is this rational? and cites cases which might be used to answer the question either way. In cases of heart collapse approaching he considers the infusions dangerous. [C. F., JR.]

MÜNCHENER MEDIZINISCHE WOCHENSCHRIFT. No. 44.

Nov. 1, 1910.

1. STERN, R. *Differences of Resistance of Bacteria when Inside or Outside the Infected Organism.*
2. *ROLLY. *The Influence of Various Diseases on the v. Pirquet Tuberculin Reaction.*
3. MEYER, H. H. *The Action of Calcium.*
4. *ZABEL. *Sudden Changes of Blood Pressure and Their Causes.*
5. JASCHKE, R. T. *The Field of Usefulness of Pfannenstiel's Fascia Splitting.*
6. METHLING. *The Forensic Value of the Hemochromagen Test for Blood.*
7. HAYMANN, L. *Experimental Study of the Causes of Otogenetic Pyemia.*
8. REICHMANN, V. *An Unusual Filarial Disease; Cure by Ehrlich-Hata.*
9. GLAESSNER, P., AND MILAVEE. *Epicondylar Fracture of the Humerus.*
10. HOFSTÄTTER, R. *Polythelia and Axillary Milk Glands.*
11. HOFFMANN, R. *Influencing Basedow's Exophthalmos from the Nose.*
12. TANAKA, Y. *Pathogenicity of the Ameba Dysenteriæ.*
13. HAGER, A. *Extrophia Vesicæ Urinariæ with Adenocarcinoma Gelatiniforme.*
14. MAYER, M. *Suicide by a Cut in the Neck in Paratyphoid.*
15. DAVIDSON, A. *Diagnosis of Unilateral Deafness.*
16. WOLFER, L. *A Method for Determining the Right Size for a Seat.*
17. PAPPENHEIM, M. *The Origin of the Substances which Bring About the Wasserman Reaction.*

2. Rolly says that his studies on humans have led him to the conclusion that in a great number of patients during the course of various diseases a negative cutaneous tuberculin test occurs; and that in convalescence it becomes positive. He believes the change due to modifications in the skin rather than to changes of immunity.

4. Although not entirely new, the observations of Zabel have been so thoroughly carried out that the results merit the attention of all who use the blood-pressure test in clinical work. The patients were put on a routine mode of life and pressures were taken daily at the same hour and under similar circumstances. He says in conclusion that the normal blood pressure is subject to irregular variations which differ in individuals; that stimuli of all sorts can produce a rise of blood pressure temporarily; and that the variations in a series of fifty measurements taken under the same circumstances is generally greater at first than later.

If the cuff of the apparatus is cold when applied, if cold air strikes the arm of the patient, or if he is frightened or hurt by the apparatus, a rise of blood pressure may follow. Neurasthenic or hysterical people and convalescents from acute disease generally show greater variations of blood pressure due to psychic influences or external stimuli than do normal individuals. These variations may be so great as to lead to wrong conclusions if their cause is not appreciated. (The article should be read to be appreciated.) [G. C. S.]

BERLINER KLINISCHE WOCHENSCHRIFT. No. 46.

Nov. 14, 1910.

1. GENNERICH. *Results Concerning the Method of Application and the Dose in Ehrlich's Anti-Syphilitic Treatment.*
2. STEFFENHAGEN, K., AND CLOUGH, P. W. *Biological Researches concerning the Origin of Bone.*
3. GOLDSCHEIDER. *Problems and Aims of Clinical Instruction.* (Concluded.)
4. BOAS, H., AND DETLEGSEN, C. *The Occurrence of Much's Tubercular Bacillus in Lupus Vulgaris.*
5. WYNHAUSEN, O. J. *Quantitative Diastase Determination in the Urine, with Especial Reference to Its Relation to Nephritis and to Diabetes Mellitus.*
6. *BOCKENHEIMER, P. *Case of Extra-Uterine Pregnancy which had Ruptured into the Rectum. Successful Operation Performed through the Rectum.*
7. BENDA, C. *Foreign Body in the Superior Mesenteric Vein.*
8. MÜNZER, A. *The Internal Secretion of the Generative Glands.* (Continued.)
9. VOIGT. *Cocaine and Alypin.*
10. RUNGE, E. *Carcinoma of the Stomach in Its Relation to the Female Organs of Generation.*

6. The author reports the case of a patient who came to him with the complaint that she was passing bits of bone with her stools. The patient was taken to the hospital, where examination revealed that just above the sphincter ani was a hole in the anterior wall of the rectum containing many bones. This was thoroughly cleaned out and besides some forty bones and the calcified larynx of an apparently seven months' old fetus, shreds of tissue and blood clot were also found. The cavity was then washed out and packed with iodoform gauze. This was gradually removed and patient made a speedy recovery, improving very much in general condition. The patient at first gave no history that could explain the condition, but later gave the fact that some five years before a supposed pregnancy terminated with sharp pain in the lower abdomen and a gradual return to her normal figure. This case, with others quoted from the literature, is advanced as evidence that in cases of probable extra-uterine pregnancy an operation should always be performed to save the patient from subsequent suffering and danger. [J. L. H.]

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Deutsches Archiv für Klinische Medizin. Band 100. Heft 3–4. Oct. 17, 1910.

1. Beck, R. *Orthodiagraphic Investigation of the Size of the Heart in Tuberculosis.*
2. *Schlaepfer, V. *Essay on the Histology of the Intestine in Pernicious Anemia.*
3. Ellermann, V., and Erlandsen, A. *Leucocyte Count and Lack of Homogeneity.*
4. *Jemma, R. *Infantile Splenic Anemia caused by Leishman's Parasite.*
5. *Koll, E. *Chronic Intestinal Disease and Bone Changes.*
6. *Abend, L. *Parasitic Hemoptysis.*
7. Lüdke, H., and Schüller, L. *Effect of Experimental Anemia on the Size of the Heart.*
8. Voswinkel and Dunzelt. *Acute Leukemia with an Infection of Paratyphoid B. Bacillus.*
9. Beyer, W. *Albuminous Expectoration after Thoracentesis.*
10. Lüdke, H. *Experimental Production of Leukemic-like Blood Picture.*
11. Wacker, L., and Poly, F. *Investigation on Carbohydrate Exchange.*
12. Lüdke, H., and Sturm, J. *Clinical and Experimental Investigation on the Origin and Course of Fever.*
13. Gräfe, E., and Röhmer, W. *Presence of Hemolytic Substance in Stomach Contents and Its Importance in the Diagnosis of Cancer.*
14. Strasburger, J. *Observations on Pulsus Alternans.*
15. Müller, J. *Induced Electric Phenomena in the Human Body and Tone of the Skin Dependent Thereon.*

2. Schlaepfer reports on the histologic appearance of the intestinal mucous membrane in pernicious anemia. Throughout the large and small intestine he found areas of slight chronic inflammation in the mucous membrane. These areas were marked by infiltration of cells of the lymphocytic series. Also there was proliferation of the lymph follicles. In these chronic inflammatory areas were small nucleated fat-containing cells which he considered a further example of a slight inflammatory process.

4. Jemma reports on some cases of infantile anemia from which, by splenic puncture, a parasite similar to the parasite of Leishman was obtained. He experimented with this parasite by injecting blood from the spleen of these cases into dogs and had fairly successful results in showing that the disease could be transmitted by inoculation. The parasite is very similar to that which causes kala azar, but he does not consider that this tropical disease and his cases of splenic anemia are the same disease.

5. Koll reports several cases of chronic foul diarrheas which show bone changes by means of the x-ray. Some of these cases improved in regard to their bone symptoms when the diarrhea was relieved. He considers there is some relation between the intestinal putrefaction and the bone injuries.

6. Abend emphasizes the importance of searching the sputum for evidences of animal parasites in cases of hemoptysis in which tuberculosis can be excluded. The eggs may frequently be found in the sputum. [C. F., Jr.]

## Obituaries.

### JOHN CUMMINGS MUNRO, M.D.

Dr. John Cummings Munro died at his home in Boston, Dec. 6, in his fifty-third year. Dr. Munro was born in Lexington, Mass., March 26, 1858. He came of distinguished ancestors; his grandfather took part in the battle of Lexington, and four professors, all bearing the name Alexander Munro, for upwards of a hundred years filled the chair of anatomy and surgery at the University of Edinburgh.

Dr. Munro received his preliminary education at the Boston Latin School and Harvard University, receiving his degree of A.B. in 1881, and the degree of M.D. from the Harvard Medical School in 1884. As was customary at that time, he began active work as a general practitioner, but his interests soon began to turn to surgery, a branch of medicine in which he early made a distinguished place for himself. From 1889 to 1905 he was connected with the Harvard Medical School in a teaching capacity. He was assistant in anatomy from 1889 to 1903, assistant demonstrator of anatomy the following year; thereafter he held respectively the position of assistant in clinical surgery, instructor in surgery and lecturer in surgery. It will be seen, therefore, that his special training for surgery came through a long course of anatomical teaching, which, no doubt, accounted, at least in a measure, for his exceptional skill. In addition to his teaching positions, which he never allowed to occupy an undue share of his time, he was surgeon at the Boston City Hospital for ten years, from 1893 to 1903, when he resigned to accept the position of surgeon-in-chief at the Carney Hospital, instituting thereby the first continuous surgical service in New England. He was also consulting surgeon to several suburban hospitals. His society membership was large. Among the organizations to which he belonged were the American Surgical Society; the Society of Clinical Surgery, of which he was president in 1905; the Association of American Anatomists; the American Medical Association, in which he always took a deep interest and in which he was chairman of the Surgical Section in 1909; The Massachusetts Medical Society; the Southern Surgical and Gynecological Association; the Boston Society of Medical Sciences; the Boston Society for Medical Improvement, together with various honorary memberships.

The work which proved to be Dr. Munro's greatest opportunity for development was undoubtedly the surgical clinic at the Carney Hospital, over which he presided with rare judgment for seven years. Not only did this continuous service give him an opportunity to carry on surgical work in the most satisfactory possible way, but it also demonstrated the usefulness of such a continuous service, in regard to which there have been differences of opinion in this community. Under his administration the Carney Surgical Clinic became widely known and much visited by men in search of high ideals of work, and by those interested in the progress of medicine in general. An attempt was also made at this clinic, and with a marked degree of success, to avoid the abuse of medical charity. Those who were able to pay for services rendered were expected to do so, while the deserving poor were treated free of charge as at other public hospitals.

Dr. Munro's contributions to medical literature were numerous, though not so extensive as those of many men of less mark. He wrote only when he believed he had a mission, and not infrequently his contributions assumed a somewhat militant tone. He was an ardent and uncompromising believer in surgical procedures and had small patience with the conservative members of the profession who counciled delay in surgical

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measures which, to his mind, gave promise of more immediate relief. He was a man of marked definiteness of opinion but was always fair in discussion, spoke keenly and to the point and never allowed words to obscure thought. One of his last contributions to medical literature was the annual discourse before The Massachusetts Medical Society delivered on June 8 of this year. His subject was "Dyspepsia and Indigestion viewed from a Surgical Standpoint." The final paragraph of this excellent paper sums up his general attitude toward medical problems so well that its quotation here is justified. "To conclude very briefly I would again beg the general practitioner to consider the probability of some simple surgical lesion of the abdominal viscera in his cases of persistent recurrent indigestion; that where such a lesion does exist surgery is the safest and surest means at our disposal to bring about a permanent cure; that his neurotics with indigestion secondary to surgical lesions have the right of relief from their local trouble; that finally there is a type of dyspepsia most naturally ascribed to gastroduodenal ulcer, but which is really secondary to an appendicitis, and which is curable to a degree not yet definitely determined, by a simple appendectomy."

As a surgeon, Dr. Munro was distinguished for his dexterity, his judgment and his fearlessness in undertaking operations before which a less skilled man might well have hesitated. His success and his personality were such that he had a very large following, and he undoubtedly added greatly to the science and art of surgery in this community, and indirectly in the country at large. As a man, he was modest, honest, simple and clean in life, and straightforward in all his actions. To those who knew him well, he was a delightful companion and a firm and uncompromising friend. As was natural in such a personality, he had a strong and beneficent influence upon younger men and undoubtedly did much to encourage many struggling practitioners, although for some years before his death he had not been brought into close contact with medical students. He met his last distressing illness with the courage and determination which one would have expected from such a character as his. He was to an unusual degree devoted to his professional work and enthusiastic in its accomplishment. Death was to him particularly unwelcome, since at the age of fifty-three his work was far from completed and his enthusiasm for his chosen field of endeavor was waxing rather than waning. In spite of this, he died with heroism and with the sympathy of his colleagues and friends to a degree hardly to be expressed in words. In his private life, Dr. Munro showed the same attributes as in his professional work. He was a devoted father and husband and gladly gave what time was not devoted to his profession to the interests of his family. He was skilled as a musician, an interest which he had fostered since his college days when he had taken active part in his college orchestra and similar musical organizations.

He was married on Nov. 17, 1887, to Miss Mary Squibb, of Brooklyn, N. Y., who always followed his professional career with peculiar interest and sympathy and often accompanied her husband to medical meetings in various parts of the country. So definite was Dr. Munro's attitude toward medical questions, and so pronounced his opinion on many matters of medical or surgical import, that his place will not soon be filled or the memory of his personality and of his accomplishment fade.

## CHRISTIAN ARCHIBALD HERTER, M.D.

DR. CHRISTIAN ARCHIBALD HERTER, of New York, professor of pharmacology and therapeutics in Columbia University, died from pneumonia on Dec. 5, in the forty-sixth year of his age He was born in Connecticut, and was a maternal grandson of Dr. Archibald Miles of that state. He has graduated from the College of Physicians and Surgeons in 1885, and afterwards took up post-graduate work under Professors Welch, of Johns Hopkins University, Baltimore, and August Forel, of Zürich, Switzerland. Inheriting wealth, he never engaged in private practice. At first, he devoted himself more particularly to the study of neurology, and wrote a textbook on the "Diagnosis of Diseases of the Nervous System," which was published in 1892. Later, he gave his attention largely to the chemical aspects of disease. He early fitted up a splendidly equipped laboratory in his own home, and his original research work attracted widespread attention in the profesion. His studies in metabolism, the physiology and pathology of the intestinal tract, the etiology of arthritis deformans, and the action of adrenalin on the pancreatic secretion were among many investigations of his which proved of great interest and value. From 1897 to 1903 he was professor of pathological chemistry in Bellevue Hospital Medical College, and on resigning that position to accept the chair in the Columbia Medical School he established the Herter lectureship at Bellevue. Under this, courses of lectures have been given by such distinguished foreigners as Von Noorden, Halliburton Friedrich Müller, Starling and Cohnheim. He also established a similar lectureship at Johns Hopkins where lectures have been given by Ehrlich, Von Meyer, Schaefer and Chiari.

For ten years he was visiting physician to the City Hospital on Blackwell's Island, and at the time of his death was consulting physician to this hospital. He was a member of the Reference Board, appointed by President Roosevelt, to investigate the influence of food preservatives on the human body, and his studies on this subject were conducted in his own laboratory. From the beginning, he was one of the directors of the Rockefeller Institute for Medical Research, and during the last two years he had devoted much time and study to the plans for the hospital of the institute, to which, on its opening recently, he was appointed chief physician.

Dr. Herter has been indeed a pioneer in research, and his untimely death is deeply deplored,

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for, remarkable as were his achievements, it may well be believed that had his life been spared he would have accomplished still more brilliant results and left a record such as is seldom made.

## JOHN CHALMERS DA COSTA, M.D.

Dr. John Chalmers Da Costa, who died on Dec. 6 at Philadelphia, was born in that city on Nov. 15, 1863. He graduated from the scientific department of the University of Pennsylvania in 1882, and in 1885 received the degree of M.D. from the Jefferson Medical College. He served at the Philadelphia Hospital as resident physician in 1885–6, and as assistant physician in the insane department in 1886–7. In 1887 he became assistant demonstrator of anatomy at the Jefferson Medical College, and later demonstrator and professor of surgery. Since 1895 he had been surgeon to the Philadelphia Hospital and since 1896 to St. Joseph's and St. Agnes hospitals. At the time of his death he was president of the Philadelphia Obstetrical Society, a fellow of the American Surgical Association and the College of Physicians of Philadelphia, and associate member of the Society of Gynecology and Surgery of Bucharest. He was author, or editor, of several important medical works and a frequent contributor on surgical subjects to scientific periodicals. His death unhappily terminates the activity of a distinguished member of a distinguished American medical family.

# Miscellany.

## CLASSIFICATION AND EXAMINATION OF MEDICAL INSPECTORS OF SCHOOLS.

In last week's issue of the Journal we commented on the proposed change in the number and salary of school physicians in Boston. The following letter from the chairman of the Civil Service Commission to one of the daily newspapers relative to the classification and examination of medical inspectors of schools seems timely and deserving of republication:

"In a recent interesting editorial your paper speaks of 'the action of the Civil Service Commission in permitting the Boston Health Board to appoint school physicians without previous examination for fitness.'

"It occurs to me that the general public may be interested in a fuller statement of the situation. For some years physicians have been appointed by the Health Board to inspect schoolchildren and have been designated in the pay-roll lists as 'medical inspectors.'

"The Civil Service Commission has considered these persons as subject to the civil service law and rules; but, owing to the small salary paid, the probable difficulty of establishing eligible lists and the pressure of other duties, it has never held an examination.

"When the question of the appointment of the proposed new school inspectors, at a reasonably high salary, arose, the commission informed the Health Board that it considered the positions classified under the civil service law and rules, and that it would probably hold an examination. Such an examination would be based wholly on the physician's training and experience and upon his technical qualifications for the place.

"At the request of the school board, the commission presented to the attorney-general, its official legal adviser, the question whether or not these school physicians were subject to the civil service law and rules and classified as 'inspectors.' The attorney-general ruled, this autumn, that the positions were not classified.

"This ruling, therefore, has taken the positions out of the jurisdiction of the commission and thrown all appointments into the hands of the Health Board, unrestricted by any requirements, except such as that board itself shall fix.

"As exactly similar positions in New York City and in other large cities are subject to the civil service law, and as it seems highly desirable that appointments to such positions should be made solely on merit and without regard to other influences, it would seem highly desirable that legislation should be enacted subjecting the positions to the civil service law. In making this suggestion, however, I do not mean to intimate that the appointments by the Health Board will be made on qualifications other than merit, but I feel that such positions should by law be removed from the possibility or attempts to introduce other considerations."

# Correspondence.

## "INFECTIOUSNESS AND PROPHYLAXIS OF CROUPOUS PNEUMONIA."

Boston, Dec. 2, 1910.

*Mr. Editor:* Your timely editorial upon the infectiousness and prophylaxis of croupous pneumonia is of great interest and importance. Only in one instance, but that a very noticeable and serious one, must I differ from your statements and advice. In regard to nightly cleansing of the "nose, throat and mouth," so many people take your advice literally and actually try to cleanse the nose by artificial means that a renewal of warnings issued by ear specialists forty years ago should be added to any suggestions of this sort. The very serious inflammatory processes within the middle ears and extending to the brain or to the mastoids from infectious material actually forced into the tympana by nasal douches or by post-nasal syringing have caused so much trouble for patients and aurists that such warnings are pertinent. On the whole, it is unsafe to make use of any fluids for "cleansing the nose." The reason for this is obvious to all who have studied the anatomy and physiology of the upper air passages. The initial source of infection must necessarily be placed where ordinary methods of "cleansing" cannot prevail. By these I mean the action of the ciliated epithelium, to bring particles outwards by forcible blowing of the nose and by swallowing. The acts of coughing and of sneezing, the latter not volitional, are somewhat effective.

The location of the only "site of infection" is behind the nose, and upon the nasopharyngeal wall. At this spot is situated the first tonsil, named after Luschka, who described it. Without going into details, it may be stated that this tonsil is usually hypertrophied or hyperplasic, in either case not normal; consequently any increase in the amount of work required of it cannot be performed. Its functions then are impaired, and if during the time when it is pathologic any excessive amount of virulent micro-organisms invade it, they may develop without interference from phagocytes to produce soluble toxins which,

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together with bacilli, enter the economy through the lymph channels.

A proper "cleansing of the nose" must mean partial or complete sterilization of the "site of infection" in the nasopharynx. This can never be accomplished by anything short of direct application to the diseased surface of sterilizing agents or of stimulants. These should be used regularly in cases of badly diseased throats and frequently in cases of acute infections. Their value as preventive measures in health is purely psychological.

Very truly yours,
EDMUND D. SPEAR, M.D.

## STAINING CAPSULATED BACTERIA IN BODY FLUIDS.

NEW BRIGHTON, STATEN ISLAND, N. Y.,
Dec. 1, 1910.

*Mr. Editor:* Referring to the article published in the BOSTON MEDICAL AND SURGICAL JOURNAL, date of Nov. 24, on "A Method of Staining Capsulated Bacteria in Body Fluids," I would like to add a very simple method of staining capsulated bacteria which I have found to give uniformly good results and using only stains that would be found in the smallest office laboratory. It is almost the same method so long used for staining the tubercle bacillus except that no decolorizing methods are used.

The thinly spread smear is fixed by heat in the usual manner, covered with Ziehl's carbol-fuchsin solution and steamed gently for one to two minutes. Wash in water and cover with methylene blue, 1% solution, for one-half minute, warming gently. Wash in water, dry and the specimen is ready to be examined. The capsules appear as very clear and distinct areas about the dark-blue stained micro-organisms.

Very truly yours,
HENRY A. CRAIG, M.D.,
*Assistant Physician and Bacteriologist,*
*Sailors' Snug Harbor Hospital.*

## RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, DEC. 3, 1910.

| CITIES. | Reported deaths in each. | Deaths under five years. | CITIES. | Reported deaths in each. | Deaths under five years. |
|---|---|---|---|---|---|
| New York | 1,312 | 290 | Pittsfield | 3 | — |
| Chicago | 651 | 155 | Brookline | 7 | 2 |
| Philadelphia | — | — | Gloucester | 7 | 2 |
| St. Louis | — | — | North Adams | 5 | 1 |
| Baltimore | — | — | Northampton | 6 | 1 |
| Cleveland | — | — | Chicopee | 1 | 1 |
| Buffalo | — | — | Medford | 3 | — |
| Pittsburg | — | — | Beverly | 4 | — |
| Cincinnati | — | — | Leominster | 6 | 1 |
| Milwaukee | — | — | Hyde Park | 3 | 0 |
| Washington | — | — | Melrose | 1 | 0 |
| Providence | — | — | Newburyport | 4 | 1 |
| Boston | 219 | 50 | Revere | 2 | 1 |
| Worcester | 38 | 11 | Westfield | 10 | 1 |
| Fall River | 37 | 15 | Woburn | 0 | — |
| Cambridge | 29 | 4 | Peabody | 5 | 2 |
| Lowell | 40 | 13 | Marlboro | 3 | 0 |
| New Bedford | 38 | 14 | Attleboro | 7 | 0 |
| Lynn | 21 | 4 | Adams | 3 | — |
| Springfield | 22 | 4 | Clinton | 2 | — |
| Lawrence | 18 | 6 | Gardner | 3 | 0 |
| Somerville | 19 | 4 | Milford | — | — |
| Brockton | 12 | 5 | Watertown | 3 | 1 |
| Holyoke | 14 | 6 | Plymouth | — | — |
| Malden | 13 | 2 | Southbridge | 3 | 3 |
| Chelsea | 14 | 1 | Weymouth | — | — |
| Newton | 11 | 3 | Framingham | — | — |
| Salem | 13 | 5 | Wakefield | 1 | — |
| Haverhill | 26 | 3 | Webster | 2 | 1 |
| Fitchburg | — | — | Arlington | | — |
| Everett | 7 | — | Greenfield | | — |
| Quincy | — | — | Methuen | | — |
| Taunton | 8 | — | Winthrop | | 1 |
| Waltham | 4 | 0 | | | |

## ANATOMIST (MALE).

ARMY MEDICAL MUSEUM.

THE United States Civil Service Commission announces an examination on Jan. 18, 1911, to secure eligibles from which to make certification to fill a vacancy in the position of anatomist (male), at $1,600 per annum, in the Army Medical Museum, Office of the Surgeon-General, and vacancies requiring similar qualifications as they may occur, unless it shall be decided in the interest of the service to fill the vacancy by reinstatement, transfer or promotion.

## SOCIETY NOTICE.

BOSTON MEDICAL LIBRARY IN CONJUNCTION WITH THE SUFFOLK DISTRICT MEDICAL SOCIETY.—Surgical Section meeting, John Ware Hall, Wednesday, Dec. 21, 1910, at 8.15 P.M. "Non-Malignant Strictures of the Rectum," Dr. James P. Tuttle, New York. Discussion by Drs. F. B. Harrington, C. L. Scudder, T. C. Hill, F. J. Cotton and J. S. Stone. Light refreshments after the meeting.

WILLIAM C. QUINBY, M.D., *Secretary*, 396 Marlborough St.
CHARLES A. PORTER, M.D., *Chairman*, 254 Beacon St.

## RECENT DEATHS.

MUNRO, JOHN CUMMINGS, M.D., M.M.S.S., died in Boston, Dec. 6, 1910, aged fifty-two years.

DR. HORACE BABCOCK, a retired physician of Gowanda, Cattaraugus County, N. Y., died on Dec. 6, in his eighty-seventh year. He was a graduate of the medical department of the University of Buffalo, and practised in Wisconsin until 1862. He then was appointed surgeon of the Second Wisconsin Regiment, and while serving in this capacity was captured at Gettysburg. After the war he located at Gowanda.

DR. JOB B. M. DICKINS, who died of cerebral hemorrhage last week in Newburyport, Mass., was born at Haverhill, Mass., in 1845. He obtained his medical education partly in Cincinnati, partly in New York. He practised at first in Cambridgeport, Mass., but removed later to Newburyport.

DR. JAMES DUNN, of Winthrop, Mass., who died of bilateral pneumonia last week at the Boston City Hospital, was born in 1883. He was a graduate of the Tufts Medical School. He is survived by his mother, one sister, and one brother.

DR. HENRI HUCHARD, of Paris, France, died in that city on Dec. 11. He was a specialist on diseases of the heart.

MCDONALD, JAMES ATHANASIUS, M.D., M.M.S.S., retired, died in Charlestown, Dec. 8, 1910, aged seventy years.

DR. JAMES ATHANASIUS MCDONALD, who died of pneumonia on Dec. 8, in Charlestown, was born in Charlottetown, P. E. I., on May 2, 1840. In 1866 he received the degree of M.D. from the Harvard Medical School, and immediately settled in the practise of medicine in Charlestown. In addition to the activities of a busy professional life, he served in 1875 as a representative to the General Court, and for many years as a member of the school committee. From 1870 to 1874 he was surgeon to the Ninth Regiment. He is survived by his widow, one daughter, and two sons, likewise physicians.

DR. WALTER H. WENTWORTH, who died of cerebral hemorrhage last week, at Providence, R. I., was born in Stockbridge, Mass., on March 7, 1841. After graduating from the College of Physicians and Surgeons, New York City, he entered the Union Army and served as a surgeon throughout the Civil War. In 1869 he settled in Pittsfield, Mass., where he had continued in practise ever since. He was a member of the Berkshire Medical Society. He was a widower, but is survived by four children.

## BOOKS AND PAMPHLETS RECEIVED.

Treasury Department. Public Health and Marine-Hospital Service of the United States. Reprint from Public Health Reports No. 54. Preliminary Notice on a Simple and Inexpensive Apparatus for Use in Safe Disposal of Night Soil. By L. L. Lumsden, Norman Roberts and Ch. Wardell Stiles.

E. Merck's Annual Report of Recent Advances in Pharmaceutical Chemistry and Therapeutics. Darmstadt, 1910.

Treasury Department. Public Health and Marine-Hospital Service. Reprint from Public Health Reports No. 53. Cholera, Its Nature, Detection and Prevention. By A. J. McLaughlin.

Ministero della Marina, Ispettorato di Sanita. Statistica Sanitaria dell' Armata per gli anni 1905 e 1906. Roma, 1910.

The Non-Surgical Treatment of Duodenal Ulcer. By George Herschell, London, 1910.

Infantile Mortality of Boston. By John Ritchie, Jr. Reprint.

Internal Secretions. By Isaac Ott, Easton, Pa.

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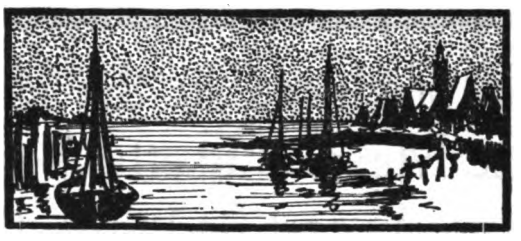

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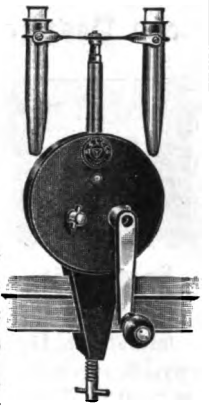

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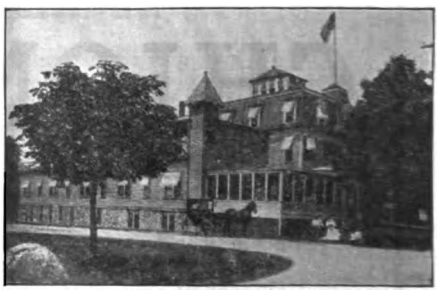

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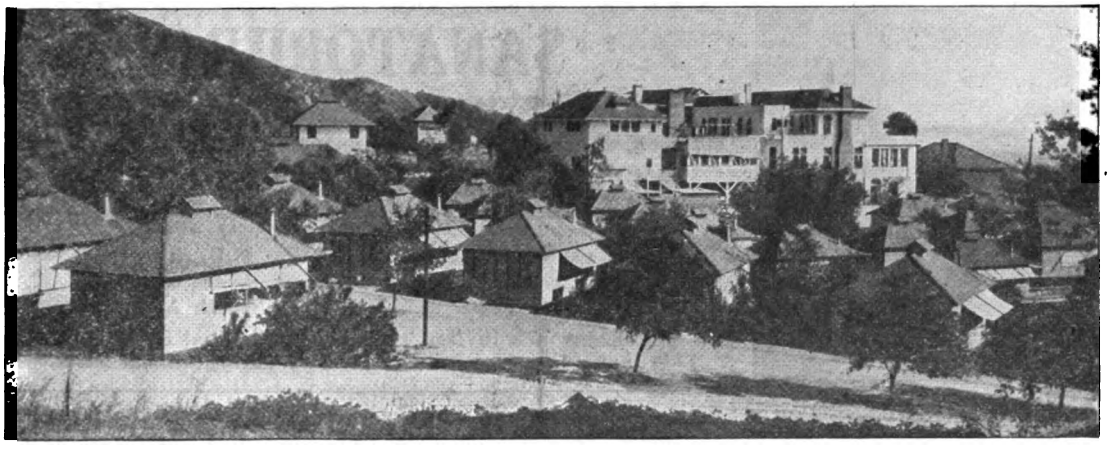

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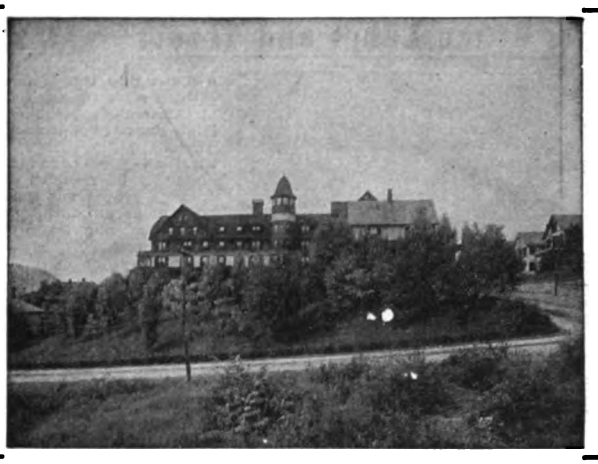

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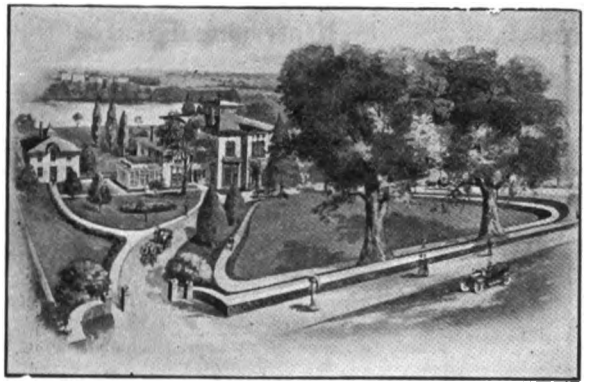

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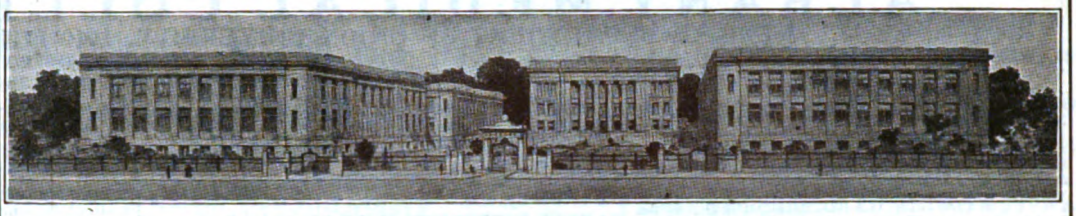

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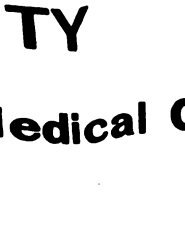


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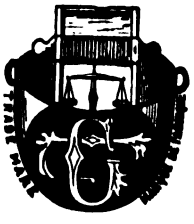

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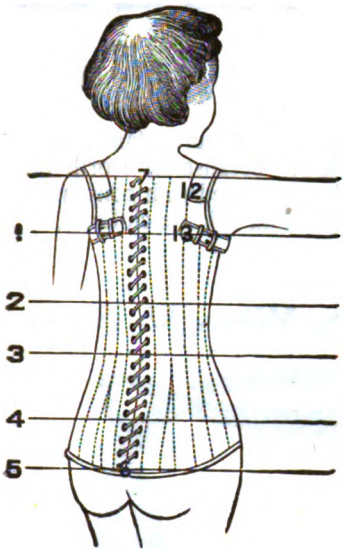


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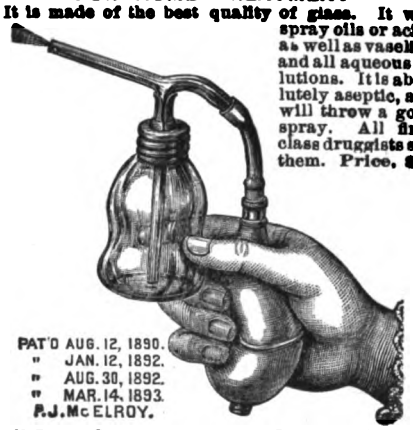


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At the last meeting of our little city society, I had the first six cases copied on a machine in duplicate and handed it to the doctors with the comment, "That is my topic—get busy." I tried to carry out the ideas as stated in the preface. The meeting did not break up until after midnight, and every one voted the meeting the best yet.

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As a constructive criticism (from my point of view as a country practitioner who is starved, in a sense, for good clinics) I would suggest that you elaborate more your discussion of the diagnosis and treatment.

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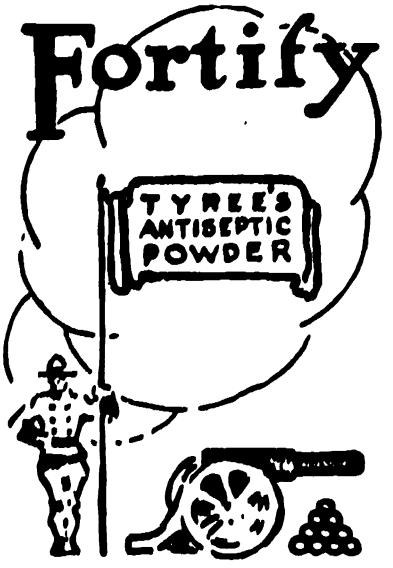


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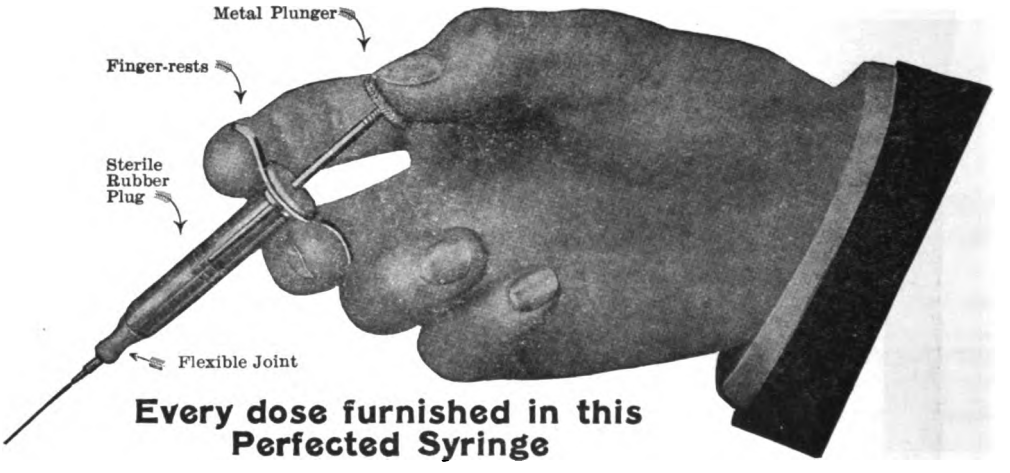


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An essay, in order to be held worthy of the prize, must contain the original investigations made by the writer. This prize is not awarded to an essay which is the work of more than one author, or which is at the same time submitted for another prize, or that has been previously published in any form. It must be on a medical, surgical, or kindred subject. Each competitor is required to send with his essay a statement that these requirements have been complied with. Essays in competition for this prize must be sent to the undersigned on or before April 1, 1911. Competing essays must be in typewriting and they must be in English, marked with a device or motto, and accompanied by a sealed envelope similarly marked, containing the name and address of the author. The payment of the prize money to the successful essayist will be made on his filing with the treasurer of this association a printed copy of the essay. In 1912 the Alumni Prize will be offered. The requirements of this are the same as those of the Cartwright Prize, excepting that competition is restricted to P. & S. alumni. H. E. Hale, M.D., Secretary of the Association of the Alumni of the College of Physicians and Surgeons, 770 West End Ave., New York City.

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## NOTICE.

In June, 1910, the General Court of Massachusetts passed an act requiring all collectors of accounts (companies or individuals) to file bonds, thus placing upon a reliable basis collectors who may be employed by or who may call upon physicians. The Colonial Adjustment Company, whose notice appears upon the third cover page of this Journal, was the first to file its bond under this act.

Battle & Co., of St. Louis, have just issued No. 14 of their series of Charts on Dislocations. This series forms a most valuable and interesting addition to any physician's library. They will be sent free of charge on application, and back numbers will also be supplied. If you have missed any of these numbers, write Battle & Co. for them.


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The value of senna as a laxative is well known to the medical profession, but to the physician accustomed to the ordinary senna preparations, the gentle yet efficient action of the pure laxative principles correctly obtained and scientifically combined with a pleasant aromatic syrup of California figs is a delightful revelation, and in order that the name of the laxative combination may be more fully descriptive of it, we have added to the name Syrup of Figs "and Elixir of Senna," so that its full title now is "Syrup of Figs and Elixir of Senna."

It is the same pleasant, gentle laxative, however, which for many years past physicians have entrusted to domestic use because of its non-irritant and non-debilitating character, its wide range of usefulness and its freedom from every objectionable quality. It is well and generally known that the component parts of Syrup of Figs and Elixir of Senna are as follows:

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|---|---|
| Syrup of Californian Figs, | 75 parts. |
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Its production satisfies the demand of the profession for an elegant pharmaceutical laxative of agreeable quality and high standard, and it is, therefore, a scientific accomplishment of value, as our method ensures that perfect purity and uniformity of product required by the careful physician. It is a laxative which physicians may sanction for family use because its constituents are known to the profession, and the remedy itself proven to be prompt and reliable in its action, acceptable to the taste and never followed by the slightest debilitation.

## Its Ethical Character

Syrup of Figs and Elixir of Senna is an ethical Proprietary remedy and has been mentioned favorably as a laxative in the medical literature of the age, by some of the most eminent living authorities. The method of manufacture is known to us only, but we have always informed the profession fully as to its component parts. It is, therefore, not a secret remedy, and we make no empirical claims for it. The value of senna as a laxative is too well known to physicians to call for any special comment, but in this scientific age, it is important to get it in its best and most acceptable form and of the choicest quality, which we are enabled to offer in Syrup of Figs and Elixir of Senna, as our facilities and equipment are exceptional and our best efforts devoted to the one purpose.

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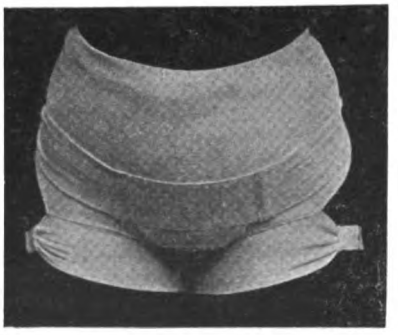

Man's Belt—Front View


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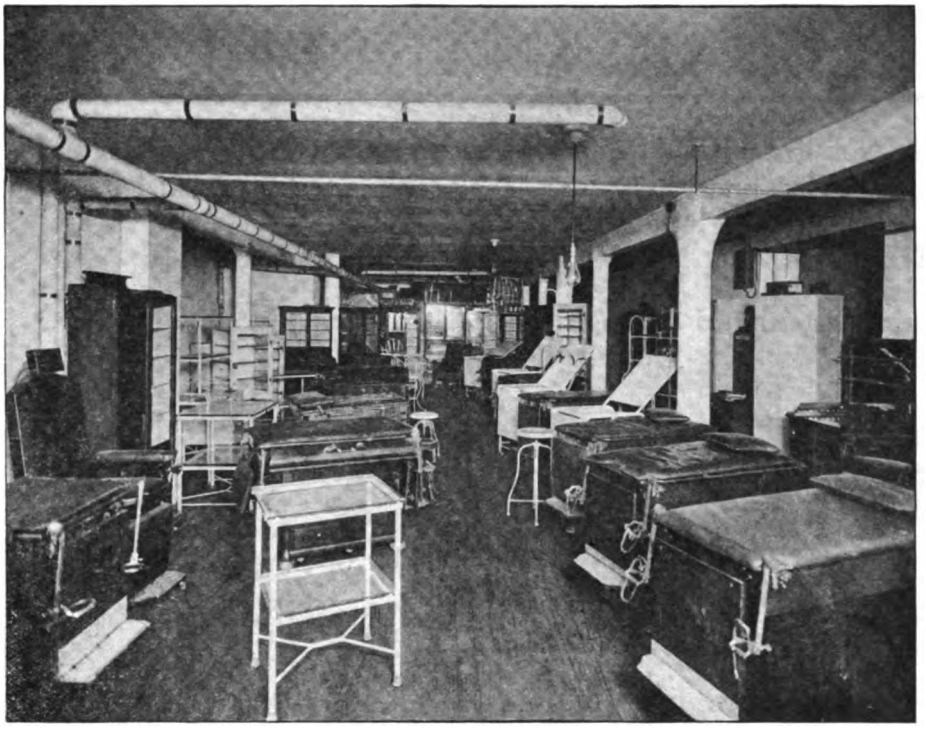

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*Uric acid solvent and alkaline urinary antiseptic.*

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## Original Articles.

# THE CARE AND MANAGEMENT OF THE TABETIC BLADDER. 1. DIAGNOSIS.

BY J. DELLINGER BARNEY, M.D., BOSTON,

*Assistant Surgeon to the Genito-Urinary Out-Patient Department Massachusetts General Hospital.*

(From the Genito-Urinary Out-Patient Department, Massachusetts General Hospital.)

In this paper I shall discuss the bladder disturbances of tabes dorsalis with special reference to their diagnosis with the cystoscope. In a second article I shall attempt to explain them, while in a third article I shall deal with their prognosis and treatment.

The following case was seen in the Genito-Urinary Out-Patient Department of the Massachusetts General Hospital in February, 1909.

M. S., fifty years old, born in Turkey.

*Past history.* — Unimportant. Denies venereal disease.

*Present illness.* — For the past two months some difficulty of micturition.

Stream starts slowly and sometimes stops. Never had to be catheterized. No pain, no incontinence. Frequency, day three or four times; rarely gets up at night.

*Physical examination.* — Abdominal examination shows distended bladder. Rectal examination shows small, normal prostate. Residual urine, 16 oz. (on two occasions). Urine clear, amber, acid, specific gravity 1,021, no albumen or sugar. No. 30 French sound goes easily to bladder.

Cystoscopy by Dr. Lincoln Davis. Bladder normal except for *marked trabeculation.* Ureters normal; prostate does not protrude into bladder.

In other words, there was no mechanical obstruction to the outflow of urine.

The case was then sent to the Nerve Department for their opinion.

The pupils were irregular, right larger than left, and did not react to light (Argyll-Robertson pupil). Patella and Achilles tendon reflexes present and equal. Romberg's sign absent. On this basis a diagnosis of early, high tabes was made. The patient has since been lost sight of.

After seeing this case it occurred to the writer that a study of a series of similar cases might prove valuable, not only from a diagnostic but also from a therapeutic point of view. This investigation has convinced me that far too little attention is given to the bladder in tabes, and that a great deal can be accomplished by careful, systematic treatment of the urinary tract.

An examination of the literature shows that disturbances of micturition are often the first, and always one of the commonest, symptoms of tabes dorsalis, as well as of many other diseases of the spinal cord. Indeed, as Gowers says, "It may be only for them that the patient seeks medical advice." One might go further and say that the genito-urinary surgeon not uncommonly sees patients "for diagnosis or treatment where from the symptoms only an organic bladder or prostatic lesion has been suspected" (Squier).

The frequency of bladder symptoms has been noted by Erb (80%), Bramwell (74.1%), Häuel (75%), Starr (80%), Gowers, Frankl-Hochwart, Oppenheim, Hirt, Neuhaus, Böhme and Sachs; indeed, by all who have looked into the subject.

That these disorders of micturition may often be the earliest of all symptoms is also agreed to by most. With this evidence in mind it seems to me that the importance of an early and complete investigation of the urinary tract in all cases of tabes cannot be overestimated.

These disturbances are many and varied. Usually a certain sluggishness of micturition is first noticed; the stream starts with difficulty, and cannot be hastened except by considerable effort. The desire to urinate may be infrequent, occurring only once or twice perhaps in the twenty-four hours. Occasionally complete retention is seen at the outset. Following this, or combined with it, there is often slight incontinence, usually at night. Or the patient complains that during coughing, sneezing, sudden muscular effort, etc., a little leakage of urine occurs. This is a very characteristic symptom. This "patchy" nature of the symptoms I consider to be of great diagnostic value. As the disease progresses complete retention (requiring catheterization), incontinence (usually the overflow from a full bladder, and necessitating the use of a urinal), or even an alternation of the two may supervene. Micturition is seldom painful, but true vesical and urethral crises may occur. Erb lays some stress on the early occurrence of dysuria and hyperesthesia of the bladder neck.

As to the objective symptoms, investigation has shown that distinct and important organic changes take place in the bladder before any hint of it is conveyed to the patient or physician. These were noted long ago by Orth, Birch-Hirschfeld, Ehrlich and Brieger, Hirt, and by Nitze in his pioneer work with the cystoscope.

Recent investigators, notably Böhme, Rinaldo, Frohnstein, and Walker, have shown in the cystoscopic examination of the bladder in tabes that these changes, consisting in the formation of the well-known "trabeculæ," may, and do occur before any other manifestation of the disease.

In his recent article Böhme has arranged his findings into four divisions which seem to the writer correct and reasonable.

1. The stage of development of the trabeculæ. There are no objective or subjective symptoms, and the condition is demonstrated only by the cystoscope.

2. The bladder reaches the climax of its compensatory power, and residual urine begins to accumulate. The condition is not yet known to the patient, and cystoscopy alone reveals the condition. A single catheterization may, however, reveal the diagnosis.

3. The stage of residual urine. Now the patient has his first subjective symptoms, weak stream and difficulty of micturition, but no real trouble.

4. This stage is characterized by an increase of all symptoms, real difficulty of micturition occurs, and urination is aided largely by the pressure of the abdominal muscles. Residual urine increases, the bladder is finally overstretched, and

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overflow retention occurs. At this stage the patient usually seeks relief from his physician, and it is at this time that trabeculation of the bladder is first observed. As residual urine begins to collect, infection may occur at any time, superimposing the symptoms of cystitis on those already mentioned. As Böhme says, the transition from one stage to another is always gradual, and I might add that the order of events may be somewhat changed.

Since the appearance of the case reported at the begining of this paper, I have made careful examinations of twenty-four cases of tabes dorsalis, all in men; I have also examined one case with a diagnosis of ataxic paraplegia with cerebral syphilis, whose symptoms were essentially those of tabes. Most writers agree that in cord lesions with involvement of the posterior columns, or of the lateral pyramidal tracts, the urinary symptoms may be the same. These cases have occurred in my own practice, and in the neurological clinic at the Massachusetts General Hospital (to whose physicians I am grateful for their courtesy and co-operation). The patients were taken as they came, no selection being made except in the exclusion of cases showing any mechanical obstruction of the urinary tract such as stricture and hypertrophy of the prostate.

In over 90% of my cases there was more or less disturbance of urination. These were as follows, the arrangement being that of their frequency, but not necessarily of their order of appearance.

| | Cases. |
|---|---|
| Difficulty of micturition (including hesitancy and a feeble stream), | 15 |
| Incontinence (diurnal), | 11 |
| Incontinence (nocturnal), | 8 |
| Painful micturition, | 6 |
| Urgency, | 5 |
| Frequency, | 3 |
| Retention, | 2 |
| "Does not feel as if he emptied his bladder," | 2 |
| Incontinence with coughing, etc., | 1 |

In three cases there were no urinary symptoms whatever.

As regards duration, these symptoms had existed in five cases for six months, in six cases for one year, in seven cases for two years, and in five cases for five years or more.

It is significant that in over 50% (12 cases) the urine was cloudy and contained pus. In three of these a culture of the urine showed a pure growth of bacilli of the colon group. As this is by far the commonest organism found in infected urine, I have no reason to doubt that it was the offending germ in all.

The presence of infection in so large a per cent of these bladders is entirely in accord with the observations of others, such as Sachs, Gowers, Böhme, Erb, Squier, Oppenheim and Bramwell. All agree that infection occurs in the last stages of the disease, but that it may appear at a comparatively early date is not given the importance to which it is entitled. Infection of the urinary tract is sure to come sooner or later in any case of obstructed bladder with residual urine. In most of my cases it was clearly autogenous; in a few instrumentation could be held responsible. This infection is of the utmost importance from a prognostic point of view because it eventually leads, without proper treatment, and often even in spite of it, to the more serious condition of pyelitis and pyelonephritis.

In my series the condition of the bladder was noted in 23 cases. Of these, 12 had cystitis, indicated by injection or edema of the mucosa, often only that of the trigone and surface of the prostate. The percentage of cystitis corresponds, therefore, to that of urinary infection. In the other 11 the bladder is recorded as normal.

In 17 cases where the condition of the ureteral orifices was noted, no definite evidence of their involvement was found.

As it was considered unnecessary and even unwise in these cases to catheterize the ureters, no definite data is at hand as to the occurrence of pyelitis and pyelonephritis. In one or two cases it was thought that cloudy urine could be seen issuing from the ureters, but such an observation by inspection only is apt to be faulty. If renal infection existed in any of these cases it was not sufficiently advanced to cause symptoms. This does not eliminate it, however, for, in the first place, it is well known that pyelitis may go on for a long time without symptoms referable to the kidney, and, secondly, these cases were all in fairly good condition and well able to visit the hospital as often as was necessary. But that a fatal ending in many tabetics is caused wholly or partly by urinary infection is the experience of most observers. I shall bring this out more fully in my third paper.

In this connection it is of great importance to find that the urine was clear and sparkling in the three cases having no urinary disturbances.

A matter of equal importance is the presence of residual urine, noted especially by the recent observers already mentioned. This was found in 19 of my cases, absent in 5. The amount varied from 1 oz. to 3 pints, and was found to vary considerably on different occasions in the same individual. It was also greatly reduced after the beginning of treatment, as I shall point out later. Residual urine was not found in those cases with no urinary disturbance, and further, in the absence of residual urine, there was no infection. Hence the sequence of residual urine, bladder symptoms and infection, as was pointed out by Böhme and other writers, and as is shown in my own cases. I believe this combination to be invariable.

A cystoscopic examination was done in all cases. As a preliminary measure, and to exclude any case with mechanical obstruction, the urethra was explored with bougies or sounds, and the prostate was examined through the rectum. No case whose urethra did not admit a No. 26 French sound (meatotomy was done in some cases) or whose prostate could fairly be said to be enlarged was considered. Furthermore, all cases were eliminated where intravesical enlargement of the prostate was shown by the cystoscope. Each

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bladder, with one exception, was viewed with the standard amount of fluid (150 ccm.) in order that, so far as possible, the results might be uniform. When possible each case was given urotropin, gr. v, t.i.d., for forty-eight hours previous to the cystoscopy, and all have been instructed to take it continuously. In the majority of the cases the passage of the cystoscope was absolutely painless, no cocainization being required. This is of considerable diagnostic value, as I shall show later. In a few cases the neck of the bladder was hypersensitive.

Twenty-two of the twenty-five bladders (over 80%) were trabeculated. This was the condition found by Böhme in all of his 8 cases, by Frohnstein in all of his 20 cases, by Rinaldo in 1 case. Thus in a total of 54 cases, 51, or over 90% of the bladders, showed trabeculæ. In addition to this we have the word of Walker that, in 31 tabetics cystoscoped by him, "some degree of trabeculation was usually present."

As regards the distribution of the trabeculæ, I am entirely in accord with the writers mentioned above. In the large majority of cases, especially the earlier ones, the trabeculæ are seen to involve particularly the fundus and side walls, while the whole trigone is normal. This is in distinct contrast to the appearance of a bladder obstructed by a stricture, or enlarged prostate. In these the trigone is always involved, often so much so as to make the finding of the ureters a matter of great difficulty in well-marked cases. The ureteric ridges are indistinguishable from the heavy trabecular branches, and the ureteral orifice lies buried between them, its location being determined only by the jet of urine. In such cases the fundus and sides may also be involved, but the picture is very different. In tabetic bladders with well-developed trabeculation, the cystoscopic picture may resemble closely that of mechanical obstruction, making diagnosis by inspection a matter of greater uncertainty. It will be seen from this that the topographical arrangement of the trabeculæ is of great importance, and the earlier the case is seen the greater is its value.

In my cases the distribution of the trabeculæ was as follows:

| | Cases. |
|---|---|
| Fundus and side walls alone, | 9 |
| Generally distributed, | 9 |
| Trigone and side walls alone, | 2 |
| Trigone alone, | 2 |

In 3 cases no trabeculation was present.

In the latter the absence of urinary symptoms, residual urine, and infection did not obtain as might be supposed. Each was noted in 2 cases.

To return for a moment to the three cases presenting no urinary symptoms, it was found that trabeculation was present in two of these. It was also observed in all of the five cases without residual urine. In other words, organic bladder changes had occurred before the loss of vesical compensation, of which residual urine may be considered an important indicator.

The character of the trabeculæ is of nearly as great diagnostic value as their distribution. In the early cases especially, but, generally speaking, in all, the trabeculæ are seen to be delicate and regularly branched. Except in cases of long standing, the interspaces are shallow, "saucer-shaped" (Walker), without the tendency to develop deep, narrow-mouthed pockets.

In contrast to these we see the trabeculæ of mechanical obstruction as coarse rounded cords, interlacing in every direction, their interspaces deep and pouching, in some instances forming true diverticulæ by evagination of the bladder wall.

The accompanying photographs show this difference in the character of the trabeculæ fairly well. Fig. 1 is from a case of post-diphtheritic

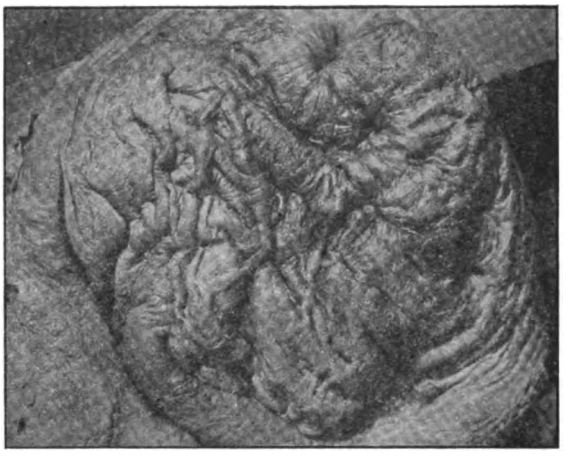

Fig. 1. Post-diphtheritic paralysis of the bladder of twenty years' duration. Trabeculæ quite similar to those of tabes, delicate, regular, without tendency to diverticulation. Photograph by L. S. Brown.

paralysis of the bladder of twenty years' duration, where, for our purposes, the symptoms were the same as those in tabes. Fig. 2 shows the trabeculæ in a bladder with prostatic obstruction. It will be seen that the difference in the appearance of the two is quite marked.

How, now, shall we explain the trabeculation of the bladder in tabes? Let me say at the outset that no theory is at hand, so far as I know, to solve the riddle of the difference in distribution of trabeculæ in the two types of vesical obstruction. All we know is that this difference exists, that it is of great diagnostic value, and that in a few cases of tabes the topographical arrangement is identical with that of mechanical obstruction. On the other hand, I have never seen a mechanically obstructed bladder with trabeculation distributed as it in tabes.

Secondly, what are these trabeculæ, and what difference, if any, exists in the two types mentioned? Are they evidences of true hypertrophy of the detrusor muscle, or are they signs of an atrophy of interstitial tissue or of the bladder musculature itself? If atrophy is going on in either tissue, is it due to pressure, to a trophic disturbance, or to infection?

In the first place, there is a difference in the two kinds of trabeculæ. This has already been

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described. It is fair to say, however, that it is not invariable. In a number of my cases the appearances were such that no one could say whether he was looking at a tabetic bladder or at one obstructed by a prostate, for example. This similarity occurred quite as often in patients with little or no disturbance of urination as in those with marked symptoms.

The same remark about the appearances of the trabeculæ applies to their distribution. Those of tabes may occasionally resemble those of obstruction, but the opposite does not obtain so far as my experience goes.

Whether trabeculæ are the result of atrophy or hypertrophy is a question of many sides. If they are due to atrophy of muscle, connective tissue, or both, from trophic disturbances, why do they occur in obstruction of mechanical origin where no nerve lesion exists? An answer to this question would eliminate much of our difficulty.

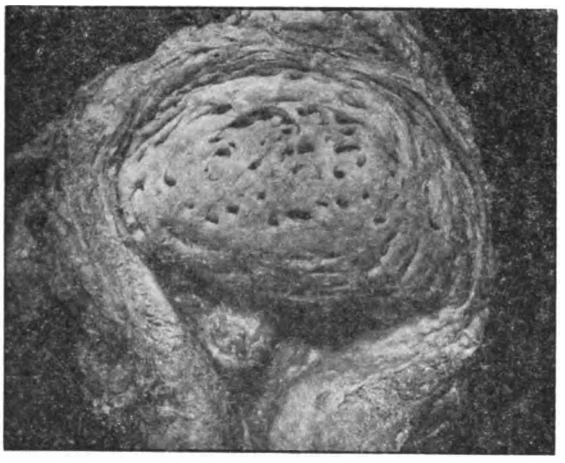

FIG. 2. Bladder mechanically obstructed by hypertrophy of prostate. Trabeculæ coarse, interspaces deep, forming little diverticulæ. This and the preceding photograph do not illustrate satisfactorily the different types of trabeculæ as seen with the cystoscope. However, in the absence of good cystoscopic photographs, I venture to offer these to illustrate my point. Photograph by L. S. Brown.

If the atrophy is due to pressure, why is it seen in cases where the intravesical pressure is so little above the normal that there are no urinary symptoms whatever and no residual urine? The latter and the symptom of difficult micturition are generally accepted as the indicators of increased pressure within the bladder brought on by an obstruction to urination. None the less, trabeculæ are seen before either of these. I think the consideration of this point in my second article will clear up this question.

Finally, is the trabeculation a result of detrusor hypertrophy? I think it is, at least in the early stages. My own observations, as well as those of Hirt, Böhme, Birch-Hirschfeld, Kaufmann, Ehrlich and Brieger, Hallé and Motz, Cealic and Strominger, and Posner substantiate this view. The very fact that it occurs before any sign or other symptom of bladder disturbance shows that the detrusor has been doing extra work. This extra effort is such that sooner or later the patient has to call on the pressure of his abdominal muscles to aid him in the emptying of his bladder. An explanation of this extra effort will be forthcoming.

Hirt has suggested that the question might be of thickening of the bladder wall as a result of overgrowth of connective tissue, seen in cases of chronic cystitis. This was discussed in the cases reported by Cealic and Strominger. If trabeculæ are due to this, how can they be accounted for in bladders where no inflammation exists? My observations agree with those of Nitze and the more recent cystoscopists, that trabeculation is very often seen without cystitis.

But the question is not answered. It is really a matter of primary detrusor hypertrophy due to the extra work it is called on to perform. This has been admirably worked out by Hallé and Motz in their memoir on the pathological anatomy of the bladder in chronic cystitis. These authors regard the detrusor changes as occurring in three stages. First, a pure hypertrophy, often tremendous, of the bladder muscle, and recognized as trabeculation. Secondly, an infiltration of connective tissue involving not only the interstices of the muscle layers, but also those of the muscle bundles themselves. Finally, the atrophic stage sets in and here the muscle bundles are infiltrated and replaced by connective tissue until they are seen at last only as little islands of muscle. These observations were later verified by those of Cealic and Strominger.

It seems to me, therefore, that we have here the explanation of the findings in tabetic bladders. At first hypertrophy, pure and simple, of the detrusor. Next, the occurrence of residual urine which invites infection, making it a matter of cystitis plus obstruction. The remaining steps are like those already described.

As a concluding remark, I may say that further investigation of bladders, with and without mechanical obstruction, especially if taken in their earliest stages, may show us that the trabeculæ are not so different, after all, in either character or distribution.

A summary of the results of this investigation shows that,

1. Trabeculation of the bladder in tabes is found in more than 80% of cases, and may occur before any symptom or other sign of vesical disturbance.

2. In tabetic bladders it is found in the fundus and side walls only, in typical cases. It is more delicate and regular than that seen with mechanical obstruction.

3. It is probable that it is due to a primary detrusor hypertrophy.

4. Residual urine is found in more than 70% of cases, often before any symptoms begin.

5. In over 50% of all cases the urine is infected.

6. Cystoscopy is generally a painless procedure, a fact which is of some diagnostic value.

7. Urinary disturbances, variable in character, are observed in over 90% of all patients with tabes.

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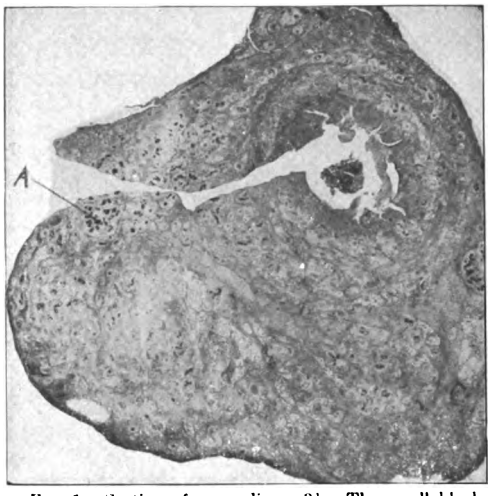


FIG. 1. Section of appendix. x3½. The small black areas, especially at the left, *A*, are clusters of ova.

FIG. 4. High power of ovum showing structure. x375.

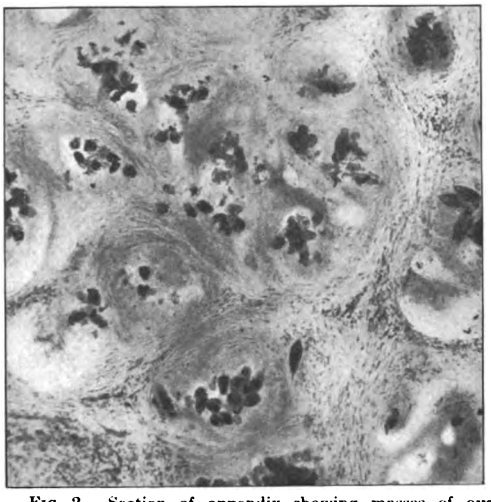

FIG. 2. Section of appendix showing masses of ova surrounded by connective tissue. x125.

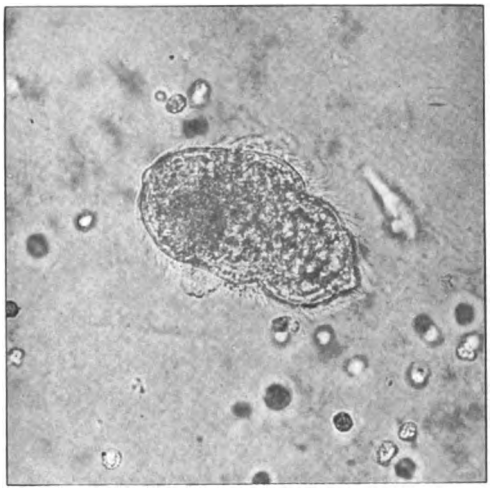

FIG. 5. Represents miracidium swimming about showing the different forms assumed. x375.

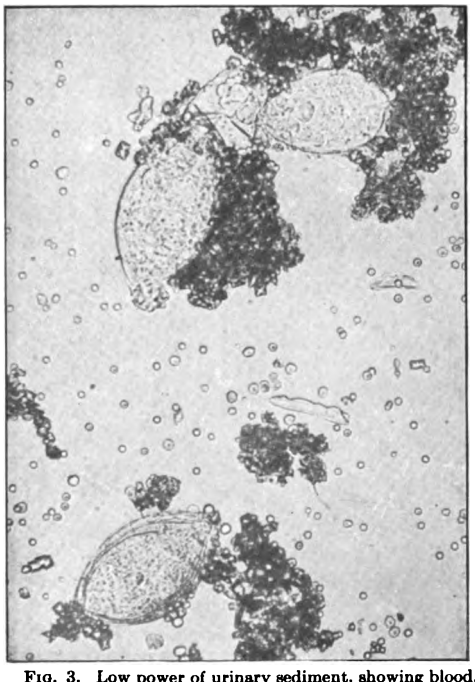

FIG. 3. Low power of urinary sediment, showing blood, pus, crystals and ova. In upper right-hand corner is miracidium that has just hatched out, leaving the empty shell behind it (to left). x200.

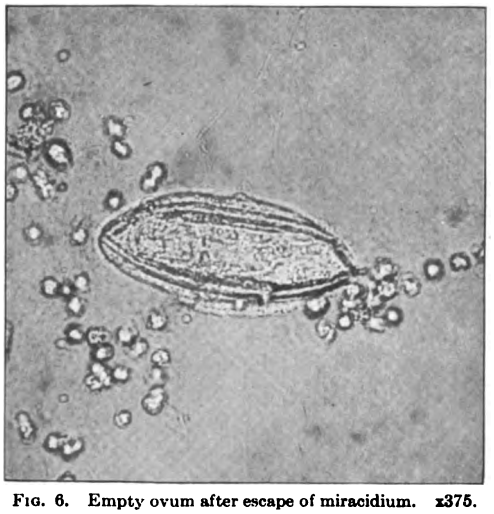

FIG. 6. Empty ovum after escape of miracidium. x375.

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## BILHARZIASIS; REPORT OF A CASE WITH APPENDICITIS; LITERATURE SINCE 1904.

BY C. GUY LANE, M.D., WOBURN, MASS.

Cases of bilharzia hematobia are sufficiently rare as yet in the United States to warrant being recorded, especially if they present features not found in those cases thus far reported. The following case is interesting in that it shows infection of both the genito-urinary and intestinal tracts, and also in the fact that microscopical sections from the greatly thickened acute appendix, which was obtained at operation, show terminal spined ova of the parasite scattered about in the wall of the appendix, these eggs being probably the predisposing factor in the attack of acute appendicitis. Appendices similarly affected have been reported in England and in Africa, but none in this country so far as I have been able to find out.

The case is as follows:

T. P., twenty-two years old, single, born in Ireland, a laborer, was admitted to the Worcester City Hospital on the night of Sept. 4–5, 1908, with the history of a sudden sharp pain in the right lower abdomen three days before. He had vomited frequently, had had "chills and fever," headache, and complained of tenderness over the painful area. His bowels had not moved for two days. His symptoms had increased in severity, and he was seen by his physician and sent to the hospital at 11 P.M. on the 4th. Examination showed a well-developed and nourished young man, with good color, and evidently in some pain. The heart and lungs were negative. His pulse was regular, rapid and rather high tension. The abdomen showed considerable tenderness and spasm about McBurney's point and below toward the median line. There was no distention. No masses were felt. The liver dullness was normal. The spleen was not felt. The patient was lying in bed with his knees drawn up. The knee-jerks were present and equal. There was no ankle clonus or Babinski. Temperature, 101. Pulse, 112. White count, 23,300. The diagnosis of acute appendicitis was made and the patient prepared for immediate operation.

*Operation.* — Dr. G. H. Hill. Gas-ether.

A three-inch incision was made at the outer border of the right rectus. The appendix was easily located, but very adherent and extending down deep into the pelvis. It was removed with difficulty by first ligating the proximal end and dissecting downwards and tieing off the mesentery and bleeding points. The appendix was very large, about 5 inches long and fully 1½ inches thick, red, indurated and covered with exudate. A small adhesion shaped like a small appendix and about 2 inches long, extending from middle of appendix backward to gut, was tied off and cut. There was some oozing of serum but no pus was found. A cigarette drain and one piece of iodoform were left in. The peritoneum was approximated with catgut. The abdominal wall was closed in layers with catgut, and the skin with silkworm gut. There was a good recovery from the ether.

The next morning, in the course of the routine examination of the urine, which was high colored, alkaline in reaction, 1.022 specific gravity, with a slight trace of albumen and a sediment containing many leucocytes and normal red blood cells but no casts, I saw numerous large, oval, brownish bodies, with a sharp spine at one end, and a distinct smooth outer covering or shell, inside of which in many cases there seemed to be something moving about. (See Fig. 3.) I thought that these were ova of some parasite, and, referring to books in the library, I found that they corresponded to pictures and descriptions of the ova of bilharzia hematobia. The appearance of the parasite in this part of the world aroused my interest, and, on questioning the patient later, I obtained the following history, somewhat indefinite, as the events had occurred seven years before:

He had never been sick before going to South Africa with the English army in May, 1901. In August, 1901, he had "enteric fever," i. e., he was sick for about two months, but up and about, had diarrhea, sometimes bloody, with fever, no particular pain, and no vomiting. Two months or more later he began to have slight pain in his bladder and urethra at the beginning of micturition, and passed a little blood nearly every time he urinated. In the middle of 1902 he had another attack of "enteric fever," similar to the first, which lasted two or three months. He was in Africa four years and four months, and was sent home with several other soldiers with the same disease to the Army Hospital, Natali, Kent, England. He was treated there three months. The diagnosis was bilharziasis (?). He was discharged from the army as unfit for service, but was told that his prognosis would be good if he remained away from the tropics. Since then he has never been entirely free from painful micturition and slight hematuria. Occasionally there has been no blood at all, but there is usually just a little at the end of micturition. His general health has been good until his present illness.

After the operation the patient was in poor condition for forty-eight hours, and it was thought that he had general peritonitis. Stimulation, irrigation of lower bowel, enemas and poultices relieved the distention and pain. The cigarette drain and wick were removed on the 8th, three days after operation, and considerable pus came from the wound. This discharge continued and the wick was replaced every day up to Oct. 8. Examination of the pus showed B. coli communis. The patient vomited more or less up to the 15th, with occasional pains in abdomen. The stitches were taken out on the 14th, and the wound was still discharging considerable pus. The patient meanwhile was having some pain on micturition and passing only a small amount of smoky urine at a time. He had urotropin and potassium citrate with practically no relief. He was out of bed on Oct. 4 and was discharged on the 20th to the Out-Patient Department. He returned there

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at intervals for three weeks, when the wound was entirely healed. He had considerable tenderness about the scar, especially on the upper and inner side, where there was considerable induration. He also complained of occasional shooting pains through the abdomen. The hematuria and painful micturition had persisted in about the same degree.

On Dec. 11 he was sent into the hospital with the diagnosis of intestinal obstruction (?). He had been at work from Nov. 30 until Dec. 9. On the 8th he had had "gas on stomach" and some slight pain, and on the 9th had vomited twice, with increase in pain and tenderness, especially in the epigastrium. His bowels were constipated. (He did not know when the last dejection occurred.) Examination showed that there was considerable muscular spasm and tenderness in the right epigastrium, but no distention, and no masses were felt. He was given salts and kept quiet in bed, with morphia for pain. His symptoms disappeared and he was discharged on the 14th.

I have seen him at intervals since he was discharged from the hospital, the last time on Sept. 18, 1910. He has been steadily at work in the loom works, and later in a tannery, with only an occasional pain in the abdomen. The frequent micturition has persisted and is usually painful and urgent. The urine usually has a little blood, especially in the last portion, and numerous ova can be found in the sediment. He looks to be in first-rate condition.

While he was in the hospital every specimen of urine examined contained the ova with pus, blood and albumen, and the stools also showed the ova and miracidia. In the stool the miracidia were first observed swimming about, and after a search the empty shells and ova were found. The vomitus on the 14th was dark green and thick, almost fecal in character, but no ova or blood were found in it. The white count on the 10th was 12,400 and the differential was as follows: Polynuclears, 78%; lymphocytes, 15%, and eosinophiles, 7%. On the 15th, when he was feeling a little worse and his temperature was elevated slightly, the white count was 21,700 and the differential count showed, polynuclears, 92%; lymphocytes, 5%, and eosinophiles, 3%.

The specimen removed at operation was a large, dark-red appendix, covered with a fibrinous exudate, with a marked thickening and induration of the wall, especially on one side, where it was nearly an inch thick. The lumen was filled with a thin, foul, dirty brown detritus, and no concretions were found. The thickening of the wall was due to a marked increase in the connective tissue, which in many places was arranged in whorls, in the center of which were numerous ova. These ova were scattered all through the tissue singly and in groups, and all the spines which were visible were terminal. Many polynuclear leucocytes were seen scattered about in the tissue as seen in an ordinary acute appendicitis; there was considerable congestion, especially of the mucosa. (See Figs. 1 and 2.)

The ova never hatched out in normal urine as far as I could observe, but in a liquid stool I saw the miracidia swimming about (see Fig. 5), and in the urine on the addition of water and warmth they broke out even as late as forty-eight hours after the urine was voided. They did not live long at room temperature or in the incubator or in bouillon, nor has any attempt to follow their life history further been successful. All the eggs observed showed terminal spines, even those seen in the stool.

It was suggested that guinea pigs be used in order to develop the miracidia if possible. Into one the unhatched ova were injected intraperitoneally and also into the abdominal subcutaneous tissue. Into a second pig the miracidia hatched from the eggs were injected in the same way, while the third pig was put into a separate cage and fed with carrots, on which both the ova and the miracidia were placed. The first pig died three days later, apparently from a localized peritonitis. At the autopsy, no trace was found of the subcutaneous injection, but in a small piece of tissue, apparently a lymph node, from the under surface of the liver, were several ova in which the miracidia could be seen to be moving about. No other evidences of ova were found. The other two pigs were killed two months later, and autopsies, including examination of the urine found in the bladder, showed no signs of the ova.

### REVIEW OF CASES.

In connection with this case it has seemed well to mention the other cases reported in this country and to look over the literature since Dr. O'Neil's very complete paper in 1904.

The first case was reported in 1882 by Dr. Booth, of Sparta, Ill., who found eggs with spines in the urine along with ciliated embryos and mature worms. The presence of the mature worms would throw some doubt on the diagnosis, as it is not known that they appear in the urine. The description of the ova is rather meager and there are no pictures or drawings as confirmatory evidence, so that there seems to exist a reasonable doubt as to the diagnosis in this case.

In the second case, reported by Dr. Curtis, of New York, in 1896, all the evidence lies in the fact that in the report of the case, the diagnosis of bilharzia was made on the microscopical examination of a bladder tumor that was removed at operation. There was no mention of any ova in the urine.

The third case was reported by Dr. Brooks, of New York, in 1897. It was a patient sent to him by Dr. Edebohls, and in the urine he found the eggs and watched them hatch out. The case was demonstrated at a clinic by Dr. Porter as the first one in this country. It was later studied and reported by Sondern working under A. Jacobi. This seems to be the first bona-fide case in which the diagnosis can be made from the description or pictures in the report of the case.

In 1900 Dr. Walker, of Evansville, Ind., reported a case, a woman who had a tumor connected with her bladder, and from this was taken a fluid in which ova, embryos and worms were found. The case was reported by the Raffertys later, in 1904, but the presence of the worms, and the pictures, tend to class this case among the doubtful ones.

Dr. Pool, of New York, in 1903, reported another case, in which the ova were found and photographed, and the process of hatching out studied. This case is probably the one referred to by Rankin in the *Brooklyn Medical Journal* in 1904.

Later in 1904 O'Neil, of Boston, reported a case with some excellent drawings and a review of the literature of bilharziasis. Since that time I have found reports of five other cases, aside from those reported among the Boers at the World's Fair at St. Louis in 1904. In regard to these latter cases, the urines of 45 of the 300

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Boer soldiers and South African negroes were examined by Dr. Smith, of Atlanta, and in 7 were found the ova of bilharzia. None had any symptoms, but all gave a history of earlier symptoms. He also observed only terminal spines on the ova.

In 1905 Anders and Callahan, of Philadelphia, exhibited a man who was in Africa for two years ten months about nine or ten years previous. He complained of persistent hematuria, and the ova were found in his urine, the ova showing the terminal spines.

One year later Gunn, in San Francisco, reported 2 cases of the intestinal variety, apparently arising in Porto Rico. Eosinophilia was present, but this might have been accounted for by the other parasites found in the stools. The ova in these cases had lateral spines, and no motility was observed, even upon rupturing the shells. Gunn also mentions another case not reported, under the care of Dr. Lando, U. S. N., at the Mare Island Navy Yard Hospital. The patient had been in Africa and was suffering from the urinary form of the disease.

Robbins, of Detroit, in 1907, reported a case seen in 1904, a man who had served in the British Army in South Africa. He appeared with hematuria, frequent micturition and pain over the bladder, and his urine showed "regular ovoid bodies, yellowish in color, with a marked projecting point at one end." He made notes on the case but did not know what ova they were, until eight or nine months later, when he saw the drawings and the records of the cases reported by Dr. Smith, of Atlanta, and then realized that his own case was similar, and reported it.

Summing up this list of cases, it is seen that those reported by Brooks, Pool, O'Neil, Anders and Callahan, and Robbins, aside from those found by Smith, of Atlanta, are undoubtedly bilharzia hematobia. In those reported by Booth and Walker, the facts do not coincide with what is now known about this parasite. The case as recorded by Dr. Curtis, in the Proceedings of the New York Pathological Society, produces no evidence to confirm the diagnosis. The same might be said about the case at the Mare Island Navy Yard, as mentioned by Gunn, while Gunn's two cases may be classed as another variety of the bilharzia, especially in view of the reports from recent investigations in Porto Rico.

### REVIEW OF LITERATURE.

In the literature since 1904 the method of infection or the mode of entrance into the body has been studied more than any other phase of bilharziasis with a view to better prevention of the disease if possible. But the question has not been definitely settled, although Looss thinks that the theory of infection through the skin gives the best explanation of the facts known. This includes also the discussion of the probability of an intermediate host. If there is one, it is not a rare creature, as the disease is so widely spread in South Africa, and is appearing in other parts of the world, the more so since the soldiers returning from the Boer War with it have scattered about so much. It was thought that the molluscs might be the host as they are in the case of other trematodes, but all the common molluscs have been searched without a trace of the bilharzia, and endeavors to provide a temporary shelter for the ova have not been successful. (Sandwith.) Any theory in regard to the method of infection must account for the passage of the ova from man to moisture, for water seems necessary for the hatching of the ova and the passage of the miracidia from water to man, and also must consider the habits of the host and the biological characteristics of the parasite. That is, the infected stool or urine must come in contact with water within forty-eight hours, and after that, the miracidia must find the host within thirty to forty hours, at least.

The theory of infection by mouth seems impossible as the miracidia cannot live in 1-1000 HCl more than one minute, or three minutes in 1-2000 HCl (Sandwith). And miracidia introduced into the stomachs of monkeys and other animals die at once. Then, too, the Greeks and Europeans in infected towns eating the same fruits and vegetables and drinking the same water are less often infected than the natives (Looss). So that the stomach does not seem to be the only mode of entrance. Elgood, however, from the investigation of the girls of the middle class schools in Cairo and the female patients in the hospital, and a study of the water supply, does think that infection is possibly due to faulty storage of drinking water or eating raw vegetables and fruit washed in dirty canals or water, and probably not due to bathing. Looss, in his article, takes up in detail Elgood's paper, and claims that her facts favor the skin infection theory, and brings out additional evidence in its favor.

Infection by the urethra is not believed in by Looss for general parasitological reasons. Sandwith gives as argument the fact that among married couples the infected person has not been known to have infected the other party. Allen found a man among the Indian attendants at the hospital where he was, who was willing to undergo a test. On three occasions he injected into his bladder many eggs of the parasite containing vigorous embryos and satisfied himself that he retained these eggs for several hours, but the result was absolutely negative. He was at the hospital for several years afterward and left free from the parasite. But Allen does think that excellent protection for the embryo, which gets in while bathing, is afforded by a long foreskin, which guides it to the urethra, and to the membranous part, from which he thinks that it extends upward, judging from the extension of the symptoms, and as a preventive he recommends circumcision.

Looss also rules out infection by the rectum as utterly improbable on general grounds, without explaining what these grounds are, and thinks that infection through the skin explains all the facts, especially since it is known that uncinariasis

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gains an entrance to the body by this means. The distribution of the disease seems to bear it out, for children in towns and the adult male laborers in the country are the chief sufferers (Looss). The latter class work bare-legged for hours in moist or muddy ground and thus are infected and reinfected. The children are playing together on moist ground or in muddy pools or ponds, and if one child is discharging ova there is a chance for many others to get the disease (Looss and Sandwith). Also the disease is rare in females, except little girls and peasant women who work barelegged on flooded plowed land. If the skin is the means of infection, it is easily seen that persons bathing with or near infected persons, or in recently contaminated water, are subject to infection.

Burfield mentioned another method of infection in a man from South Africa with an appendiceal abcess which had pointed posteriorly through the sciatic notch and was opened there. Later in England the appendix was removed and found to contain many bilharzia ova in its wall. The man had frequently bathed in the river after the sinus had formed, and Burfield thought that the bilharzia had entered there rather than that the appendicitis was caused by the bilharzia.

Various opinions have been expressed in regard to the significance of the lateral and terminal spines on the ova. Sandwith says that eggs passed in the urine generally have terminal spines and those in the feces often lateral spines partly because of the pressure of the feces. There are not two varieties of worms, and it is not necessarily true that terminal spined ova come from the bladder, or that lateral spined ova are peculiar to the rectum. He believes that all normal eggs have terminal spines and that eggs with lateral spines are abnormal or abortive. The same immaturity is found in other trematodes, according to Looss. Since 1906 many cases have been reported from Porto Rico and the Canal Zone and cases that have been in Porto Rico, in which lateral spined ova have been found, and it has been suggested by Manson, in 1905, that these lateral spined ova belong to a different member of the bilharzia family, and evidence accumulated by Holcomb, Higgins,* Gonzalez-Martinez and other workers, in Porto Rico, tends to favor this view. The cases reported by Gunn seem to belong to this class.

These are the principal points brought out in the last five years, but additional data are necessary to settle definitely the questions in regard to the life history of the parasite, and thus the rational means of prophylaxis and treatment.

SUMMARY.

1. This is a case of both intestinal and genito-urinary bilharziasis with terminal spines on all the ova seen;

2. Complicated with an acute appendicitis, with operation and recovery, sections of the appendix showing many bilharzia ova in the wall.

3. A review of the reported cases brings out the fact that there are only five undoubted cases of the South African bilharzia hematobia among them.

4. In the last five years, more evidence has been advanced for the skin infection theory.

5. Investigation shows that the lateral spined ova may belong to one species of bilharzia and the terminal spined to another.

I am indebted to Dr. C. D. Wheeler and Dr. G. H. Hill, of the Worcester City Hospital, on whose service the case was admitted, for the privilege of reporting this case, and to Dr. C. L. Overlander, of Boston, for help and suggestions and also for the pictures. The photographs were taken by Mr. L. S. Brown, in the Pathological Laboratory of the Massachusetts General Hospital.

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## TUBERCULOSIS AMONGST THE PHILIPPINE SCOUTS (NATIVE TROOPS) OF THE UNITED STATES ARMY.

BY ISAAC W. BREWER, M.D.,
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TUBERCULOSIS, although causing the largest mortality, has probably received less attention than any other disease that afflicts the inhabitants of the Philippine Islands. In the city of Manila it causes about 14% of the deaths, and the death-rate is 538 per hundred thousand. Just how much sickness it causes amongst the native population is difficult to ascertain from the data available. However, some information upon the subject may be had from a study of the records of the United States Army, from which it is possible to obtain the admissions to "Sick Report" because of tuberculosis amongst the native troops for the years from 1902 to 1908.

As a military force, the Philippine Scouts were organized in the summer and fall of 1901, and the number has been increased from time to time until there are now about 5,700 on the rolls. They are organized into companies of one hundred and ten men each, and in most instances four companies are assembled into a battalion.

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When first organized, these troops were in the field much of the time, and were for the most part quartered in native towns, occupying the houses vacated by the inhabitants. Later it became the policy to construct barracks of native material outside of the towns for their use. However, from the very first, great attention has been paid to the sanitation of their quarters and the surrounding grounds.

Before enlistment each man is required to pass a rigid physical examination, and only men in the best physical condition are taken into the Scouts.

The clothing issued to them is about the same as that used by the white soldiers, and is generally considered as satisfactory.

Since July 1, 1910, they have been allowed thirteen cents per day for subsistence. Previous to that time they were issued a daily ration as follows:

| | Ounces. |
|---|---|
| Fresh beef, | 12 |
| Flour, | 8 |
| Rice, | 20 |
| Potatoes, | 8 |
| Coffee, | 1 |
| Sugar, | 2 |

If available, the company commander could substitute bacon, canned beef or fresh or canned fish for the beef allowance, and at times onions and canned tomatoes were issued in lieu of part of the vegetable allowance. At all times the diet was varied and enlarged by articles purchased from funds obtained from the post exchange and other sources.

Beri-beri prevailed extensively amongst the native troops for some years, and early in the present year, mongos peas were substituted for a portion of the rice ration. This substitute is now largely used, and beri-beri has disappeared from amongst the Scouts.

As regards the nutritive value of the native soldiers' ration, Dr. Hans Aron, of the Philippine Medical School, who has made a study of the diet of the Filipino, informs me that the above diet represents about 3,000 calories, which is about the same as the well-to-do natives of the town of Taytay provided for themselves. The Scout ration, however, is richer in proteids, and from its greater variety is probably more readily assimilated.

These troops spend a large portion of their day in the open air, either drilling or working, and the physique of the men improves greatly during their term of service.

In general, it may be said that the native troops are well housed, clothed and fed, and are better able to resist disease, than is the civilian population of the Islands.

Amongst picked men, living an outdoor life in a mild climate like the Philippine Islands, we should expect to find but little tuberculosis; but, on the contrary, the disease is very prevalent amongst them. During the seven years ending with 1908, 211 Scouts were admitted to Sick Report because of tuberculosis, which gives an average admission rate of 6.3 per thousand. This is about one per thousand greater than the rate for the white troops serving in the Philippines, and is nearly twice as great as the rate for the native troops in India.

| | Admission rate. |
|---|---|
| Native troops, Philippines, | 6.3 |
| Native troops, India, | 3.6 |

These differences are certainly worthy of careful consideration by those who are responsible for the health of the Scouts.

It is believed that most of the cases of tuberculosis amongst the Scouts are contracted in the "soldiers' barrio," which is located on the outskirts of most of the posts. Nearly every Scout is either married or lives with a native woman. It is the custom to allow the men, when not on duty or "restrictions," to sleep out of barracks. In most instances, the company commander assures himself that the houses occupied by the families of his men are reasonably clean before he will allow them to sleep out, but these buildings are nearly always deficient in ventilation, especially during the night; and as most of the houses in the Philippine Islands harbor a consumptive, it is safe to assume that nearly all of the homes of the Scouts are infected with tubercle bacilli.

A great step towards the prevention of tuberculosis amongst our native troops would be to move "soldiers' barrio" on to the reservation so that it may be under military control. It would then be possible to see that the houses are properly ventilated, and to guard against the introduction of cholera and similar diseases. If this cannot be done, much good can be accomplished by making frequent inspections and restricting those men whose families do not comply with the sanitary regulations. Under no circumstances should the barrio be abolished, or any restrictions placed upon the marrying of the Scouts, because it keeps them free from venereal diseases which prevail most extensively amongst the white troops.

At present, persons who contract tuberculosis in the Philippine Islands have but little chance of being cured. Modern treatment of the disease is practically unknown, excepting in Manila, where there are a few clinics, and where a sanitarium has just been started. Hospital facilities for advanced cases can rarely be secured even in Manila.

Americans who contract the disease are, for the most part, returned to the United States. The native soldiers are collected at the division hospital and discharged within a few months after the diagnosis of tuberculosis is made. A large portion of the native population receive no treatment, excepting patent medicines, of which there is an unlimited supply in the Islands.

It will be a long time before the Philippine government can do much towards the prevention of this disease. In the meantime, any Americans who are interested in the Philippine Islands can make no better investment than to establish a clinic or hospital for the treatment of tubercu-

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losis in some of the provincial towns. The statistics here presented show that a minimum of not less than six beds per thousand will be required. This can hardly be hoped for, but any endowment will be gladly received by those who are working to eradicate tuberculosis from the Philippines. The Philippine Islands Anti-Tuberculosis Society has recently been organized and is making a start towards the suppression of tuberculosis, but it needs all the encouragement and financial assistance that can be had from the people of the United States.

## Clinical Department.

### NEW ENGLAND BRANCH OF THE AMERICAN UROLOGICAL ASSOCIATION.

SPRING MEETING HELD AT THE BOSTON MEDICAL LIBRARY, MAY 24, 1910.

*President*, DR. F. S. WATSON, Boston.
*Secretary*, DR. R. F. O'NEIL, Boston.

DEMONSTRATION OF PATIENTS.

DR. F. S. WATSON, of Boston, showed a patient who has had

A PERMANENT LUMBAR RENAL FISTULA ON THE LEFT SIDE FOR NEARLY SIXTEEN YEARS. BILATERAL RENAL FISTULA FOR THE LAST SEVEN YEARS, AND WHO HAS BEEN ALL THE WHILE, WELL, COMFORTABLE AND ACTIVELY EMPLOYED.

I have already, some years ago, reported this case. My reasons for doing so again are as follows: (1) In 1905 I proposed a new method of attacking certain cases of vesical tumor, and the essential feature of that proposition was the establishment of bilateral permanent lumbar renal fistulæ. (2) A distinguished member of the American Association of Genito-Urinary Surgeons made the statement at its recent meeting in Washington that death would be preferable to enduring the miseries entailed by the existence of permanent lumbar renal fistula. (3) The fact that this statement is far from being true provided the attending surgeon knows how to arrange the renal drainage properly. (4) The further fact that I have a patient to show to you here to-night who has had to endure the "miseries" of renal fistula in one loin for fifteen years and in both loins for the last seven of them, and whose case offers the most positive contradiction to the statement made by my distinguished colleague which I have quoted above.

This patient, who will presently tell you what his experience has been, I have had under observation for nearly sixteen years. He has been leading an active business life all the while, he has been well, free from pain and even discomfort, and no one has been aware of his infirmity.

The whole question of misery or the reverse in the case of a patient with permanent lumbar renal fistula depends upon the attending surgeon's ability or inability to arrange the drainage of the urine in such a way that the patient and his clothing shall be kept dry and absolutely free from all contamination with the urine, which, in many instances, runs around the outside of the drainage tube as well as through it (and this is the most essential point in the matter); furthermore, that he shall be able to take part in life actively and that he shall be free from all pain and discomfort of consequence. Now these conditions cannot be secured in the case of a day laborer, but they can be secured in that of any one in ordinarily good circumstances and who can be properly cared for. In some cases it is not a question of choice with regard to the establishment of a permanent renal fistula, and in such instances it is most important to know how to care for the patients.

The bare statement of the steps that were taken successively in this case is all that is necessary for the purpose of this communication.

*Fifteen and a half years ago, pyonephrosis of the left kidney* and an obstructed ureter. *Nephrostomy* and the establishment of a *permanent lumbar renal fistula* with a large rubber drainage tube continuously worn in it.

*Nine years later*, acute *infection of the right kidney*. The *same operation upon it* as was done on the left side, and permanent drainage established in that loin.

*Four years later, calculi formed in both kidneys. Calculi removed* through the fistulæ after they had been incised and enlarged. An interval of about one month between the operations. Drainage resumed. *Just before the second of these two operations*, a *severe hemorrhage*, which was arrested by ligature of a vessel at the inner end of the fistula leading into the left kidney. Calculus removed at same time.

Three years later, chill, fever, *due to pus formation* in the right kidney, spontaneous evacuation of the pus through the bladder. Recovery.

These points sum up this patient's experience in the matter of operations, of which there were in all five. The whole length of time demanded for convalescence from these five operations during the fifteen and a half years has been about seven months. Throughout the rest of these years the patient has been actively employed, well and free from all discomfort other than that entailed by the fact of being obliged to wear his receptacles for the urine on his back, and the time required in order to wash out the kidneys daily.

This is the point to which I wish to direct your attention, and it was for the sake of giving you all here to-night the actual visual proof of this patient's condition, and of hearing from his own lips just how much or how little distress he has had from his infirmity, that I have again reported this case. I will now ask him his own view of the conditions under which he has lived all these years. "Wont you tell us, Mr. ——, just what your experience with this condition has been?"

Mr. —— replied that there was really no actual discomfort in the condition. That apart from its taking the time required for the daily washing out of the kidneys morning and night, and the adjusting of the tubes, it entailed not much more trouble than shaving oneself daily. He had been wholly free from pain and even discomfort of any consequence. Perhaps the greatest inconvenience attaching to the condition was the fact that he was prevented from making visits in the homes of friends, but otherwise he had not been handicapped by it in any way, nor was any one aware

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of his infirmity except a few medical men and the members of his family.

He had been in active business with the exception of the short periods when he was kept away on account of the different operations, which was, as Dr. Watson had said, about seven months in the course of the fifteen odd years that had passed since the first operation. He had always been able to take all the exercise he needed, and had recently been for a short time in the country, where he had been taking daily walks of eight or ten miles. On the whole, he would say that he thought he had had as little discomfort, so far as the constant drainage from the kidneys is concerned, as the average man has from the various minor ailments which he is likely to have to endure.

In conclusion, gentlemen, I think I may say that you will agree with me, after what you have seen and heard here to-night, that the statement I quoted at the beginning of this communication, to the effect that death would be preferable to enduring the miseries imposed by permanent lumbar renal fistula, is very far from being justified, and I believe that you will join me in contradicting it positively if you should hear it made in the future. I should add that the apparatus which I have some years ago devised for the purpose of keeping the patient and his clothing dry and for receiving the urine that flows either through or around the tube has not been required in this instance because of the fact that there is no leakage around the tubes at all owing to the close adaptation of the tract of the fistula upon the outside of the drains. This fortunate feature makes it perfectly simple to prevent all contamination of the skin or clothing by the urine. In many cases, however, a special device is demanded in order to avoid this, the one really distressing feature of such renal drainage, and the apparatus which I devised for this purpose is entirely satisfactory for such patients. I have already published descriptions of it so I will not take more time now to demonstrate it to you. The descriptions will be found in Watson and Cunningham's "Diseases and Surgery of the Genito-Urinary System," 1908, Vol. 2, chapter on Operations on the Kidneys. It is described but badly illustrated in the *Annals of Surgery*, September, 1907. The apparatus is made by Messrs Codman & Shurtleff, instrument makers, Boston.

*Question.* What arrangements are made at night?
*Answer.* He takes off the can, removes the tubes, putting in long ones which go to bottles outside the bed.

## Demonstration of Specimens.

Dr. J. W. Keefe, of Providence, showed a specimen of

### SARCOMA OF THE KIDNEY.

I have here a specimen supposed to be the right kidney which I removed a short time ago from a woman forty-four years of age. Upon incising the kidney I found several calculi which may be seen imbedded in the specimen. The patient stated that some twelve years ago she had a severe cystitis and was treated at the time, in a hospital, by bladder irrigation.

She remained fairly well until three years ago, when she commenced to have pain in the back and right loin and at present a mass can be felt in the right side just below the costal border. She complains of frequent micturition, more particularly at night. She has been

Fig. 1. Median section. Sarcoma of kidney.

unwell but twice during the past year and has lost about twenty pounds in weight.

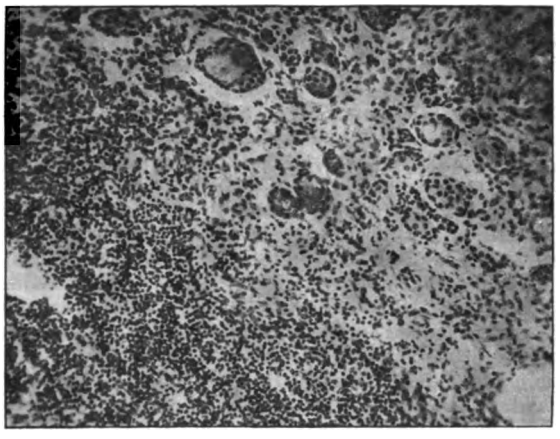

Fig. 2. (x150.) Sarcoma of kidney.

I made a cystoscopic examination on the day of operation and saw practically normal urine issuing

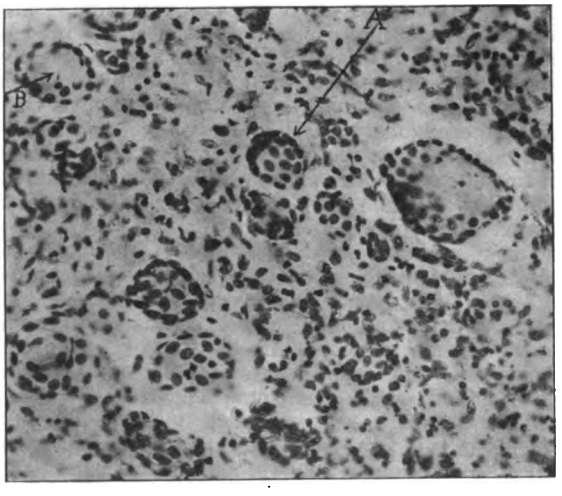


Fig. 3. (x300.) Sarcoma of kidney.

from the left ureter. No fluid issued from the right ureter.

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The specimen here presented, which appeared to be the right kidney, was removed by the transperitoneal operation. I encountered very little hemorrhage. The renal artery and vein could not be demonstrated. Upon incising the specimen I could see no evidence of renal tissue, but found several calculi imbedded in the mass.

The pathologist at the hospital reported that the specimen was a small round-celled sarcoma. Subsequently I asked Dr. Harold G. Palmer, of Providence, to examine the specimen and his report is as follows:

Path. No. 2021.

Specimen from Kidney. Received June 4, 1910.
Clinical Diagnosis ?
Pathological Diagnosis. Tumor—embryonal in type.

The specimen received is a tumor that includes the right kidney and its perirenal fat. The specimen has been bisected and preserved in formalin solution. The fresh specimen is reported to have had the appearance, on section, of a uterine fibroid. The outside measurements are: Circumference, perpendicular, 35 cm.; transverse, 31 cm.; a somewhat flattened ovoidal mass. The outer surface consists of irregularly lobulated shining yellow fat. No capsule can be demonstrated. The cut surface presents an irregular stellate mass of bluish to yellowish-white dense tissue imbedded in an envelope of pale yellow fat that varies in thickness from 1 to 4 cm. The entire cut surface measures 11 by 14 cm., the stellate mass 5 by 8 cm., and approaches nearest to the surface at the anatomic level of the hilum, where it appears prolonged as fibrous bands into the fat. A calculus, the visible portion of which measures 12 by 25 mm., projecting 14 mm. from the cut surface, is situated in a position that corresponds with the renal pelvis and is closely surrounded by a dense envelope of cartilaginous consistency. This calculus terminates in a rounded point that fits into a facet on a small calculus that is imbedded in the substance of the opposite cut surface of the specimen (Plate "A"). There are two more imbedded calculi ("B" and "C"), the points of which are barely visible. A few millimeters below these calculi there is an area ("D") which is of the consistence of cartilage and is infiltrated with calcareous matter. A cavity near the margin of the specimen measures 3.5 by 2 by 1.5 cm. Its wall is thick and firm the lining thrown into longitudinal folds. The tissue inside the fatty envelope is firm, the cut surface smooth. All normal markings are obliterated and there is nothing whatever macroscopically to suggest the presence of renal tissue. The specimen weighs 565 gm. Sections taken from various planes and regions of the specimen.

*Microscopic examination.* — Sections present a tissue that is exceedingly variable in component elements and complex in structure. There are at least three distinct types of cells present, viz., (1) epithelial, (2) lymphoid, (3) connective tissue, the last being present in several morphologic forms. The first two types go to make up the essential feature of the neoplasm, namely, tube-like clusters of epithelial cells indefinitely and irregularly situated in a very cellular connective tissue stroma, and more or less isolated, larger and smaller islands of lymphoid cells (Plate II). The epithelial cells are somewhat variable in size. All have fairly uniform sized round or oval nuclei that have a delicate chromatin network which stains readily. The cytoplasm is generally clear, but at times finely granular and occasionally shows minute vacuoles. The arrangement of the cells is, as already stated, in tube-like clusters. Sometimes these occur as solid masses of cells with a sharply defined, rounded outline (Plate III, A); at other times the cells are so grouped that a central or eccentric space or lumen is formed (Plate III, B). The more highly developed tubes show two or more layers of surrounding cells. Individually these epithelial clusters vary widely in size. In some instances they are sharply defined from the surrounding connective tissue, but often the definition is less distinct, the cells blending gradually into the cells of the stroma. The tissue that is considered as stroma consists of connective tissue cells that are, at times, small, compact, with small, deeply staining nuclei; at others, large, diffuse, with large, oval, vesicular nuclei and indefinite cytoplasm (Plate III). In addition to this type of connective tissue, there are numerous areas that present unstriped muscle, the amount varying from a few scattered cells to considerable bundles of crossed and interlacing fibers. The islands of lymphoid cells (Plate II) as such present nothing especially remarkable. They are never sharply defined but blend off rather gradually into the loose connective tissue. In some instances they are in fairly close association with the epithelial elements.

The specimen contains microscopic areas composed of cells that are consistent in morphology with the cells of the adrenal cortex. Scattered indefinitely through the general mass of connective tissue, there are many cells that have a bilobed, deeply staining nucleus and a moderate amount of cytoplasm rich in fine eosinophilic granules. These cells are somewhat smaller than a neutrophilic leucocyte.

This description comprises a composite picture of sections of the specimen as a whole. Individual sections show wide differences in composition, some showing chiefly lymphoid elements, others chiefly epithelial, connective tissue elements being present in both instances. The epithelium in tube-like clusters is not looked upon as degenerating tissue; it is considered a constructive process. Likewise, the islands of lymphoid cells are not considered in the light of a round-cell infiltration, but present here as aberrant lymphoid tissue.

It is difficult if not impossible to name, in a single word, the process here present. The tumor throughout is embryonal in type. Until a comparatively recent date, a large majority of tumors associated with the kidney were classified broadly as sarcomata. Recognition of hypernephroma as a distinct neoplasm caused a revision of the nomenclature. Recent studies of numerous observers have established the fact that there are new growths, malignant or benignant, that fail to come under any established classification. At present the genesis of tumors associated with the kidney is sufficiently obscure to warrant naming the morbid process present in this specimen simply as a tumor, embryonal in type.

*The calculus.* — Chemical analysis of one of the calculi shows the composition practically pure calcium carbonate.

Harold G. Palmer.

## Discussion (Dr. J. F. Keefe's case).

*Question.* Was there any fat tissues present? It looks like a lipoma.

*Dr. Keefe.* The pathologists reported that it is sarcoma.

*Question.* I would like to ask if any one has seen primary carcinoma of the kidney.

*Dr. Watson.* I have. It is very rare. I had one in which the growth was pure carcinoma. Secondary metastases in the kidney are very common.

*Question.* One point suggested by Dr. Keefe's case: In the case of malignant growths, what might be the

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percentage of calculi present in these tumors? It has often occurred to me that a calculus or calculi might act in the kidney as gallstones do in the gall bladder, as the causative factor in the development of malignant disease.

*Dr. Watson.* In regard to the presence of calculi in malignant disease, I think they are rather conspicuous by their absence.

Dr. G. O. Clark showed a specimen of

### RENAL CALCULUS.

I had hoped to present to-night a very rare specimen — what the pathologist in his preliminary report stated was *a calculus embedded in the renal substance.*

As you are well aware, the sites occupied by renal calculi are nearly always the pelvis or the calyces. Sometimes a calculus engages in the ureter and is arrested at variable points along that canal. In a certain number of cases the kidney is transformed into a series of pockets, some of which contain calculi; these pockets represent dilated calyces, and they connect with the pelvis by orifices of varying dimensions. Sometimes, secondary inflammatory adhesions obstruct the orifice previously existing between the pelvis and the calyx and the pocket is then left independent of the principal cavity of the pelvis. This possibility makes it necessary for the operator not to be satisfied with merely exploring digitally the opened pelvis and the dilated calyces leading off it, but to explore also the parenchyma of the kidney.

The kidney here presented by me when more carefully examined presents a calculus of smooth surface but irregular in outline, roughly the size of two peanuts fused end to end. It lies apparently in the kidney parenchyma, but in reality not so. Its sac is seen to be formed by a dilated calyx whose communication with the renal pelvis has been obliterated by inflammatory changes.

This right kidney was removed at autopsy from a woman forty years of age dying of pulmonary embolism eighty hours after perineorrhaphy done for complete tear of the perineum into the rectum resulting from high forceps delivery three weeks previous to operation.

The *accouchement forcé* was necessitated by a fibroid tumor of the anterior uterine wall. During life the kidney stone had given rise to no symptoms. The uterine tumor had been recognized. The labor had been successfully and aseptically completed.

A cystitis of B. coli origin developed post partum, ascended to the left kidney and produced a pyelonephritis.

The liver showed focal necroses and there was a septic spleen. The above autopsy findings, indicative of a colon bacteriemia, were undoubtedly predisposing causes of the pulmonary embolism which induced death. The specimens illustrating the above findings are for your inspection.

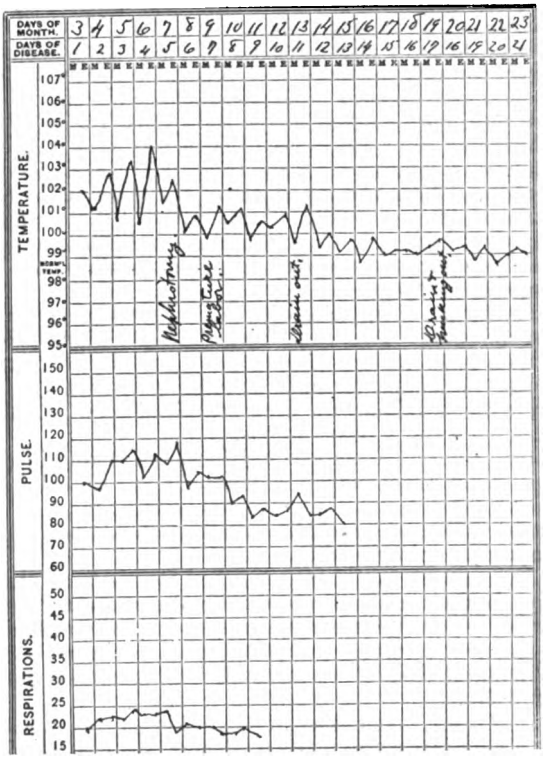
Autopsy done by S. R. Haythorn, M.D., of Harvard Medical School, Department of Pathology. Patient, Mrs. A. H., of Dr. L. F. Cusick, of Nahant, to whom I am indebted for the privilege of reporting the case.

## Report of Cases.

Dr. C. G. Cumston, of Boston, reported

### A CASE OF PREGNANCY COMPLICATED WITH PYELONEPHRITIS.

In the *New York Medical Journal*, 1900, I recorded my first case of pyonephrosis complicating pregnancy, since which I have published two papers, one on pyelonephritis of pregnancy and one on pyelonephritis complicating the puerperium in the *American Journal of the Medical Sciences*, respectively in January, 1906, and July, 1908. In the second paper I reported a second personal case in which nephrotomy was done with a fatal result, while in the second paper I reported three cases during the puerperium, all of which recovered. The case which I wish to report to-night has recently been under my care and is now well on the road to recovery.




Pyelonephritis of pregnancy.

Mrs. P. F., thirty-one years of age, a physician's wife, married six years. She has had two normal confinements, the first one in June, 1905, the second in October, 1907. According to her history, she has always enjoyed good health, but since her last confinement she has been troubled with varicose veins of the right leg.

Shortly after she became pregnant for the third time she began to feel tired and occasionally quite weak and dizzy, and this increased towards the fifth month to such an extent that she occasionally was obliged to remain on the lounge the greater part of the day. Ten days before coming under observation, while dressing in the morning, the patient experienced a sensation as if something had given away in the back and this was followed by quite severe pain, which, however, was less

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marked towards night. The pain did not entirely disappear, but she had a fairly good night. On the next day the pain was very severe and located in the right renal region. She felt weak and complained of some headache. In the evening she had a severe chill, which was repeated twice in the night and on the next day the husband consulted with another physician. In the recumbent position the very violent pain disappeared. But there persisted a dull, dragging sensation on the right side. It was noted that the urine, which had been passed frequently during the two previous months, had been cloudy, and micturition was painful and had increased in intensity as the pregnancy advanced.

She was kept under observation for the next week, during which she ran a temperature between 101° and 102° F., more or less constantly suffering from headache as well as the persistent pain in the renal region. As the symptoms continued in spite of a milk diet and the exhibition of urinary antiseptics, she was finally sent to Boston and we were asked to see the patient in consultation.

We saw her on the morning of April 3, 1910. The patient, a well-nourished woman, was in the seventh month of pregnancy; the uterus was found three fingers' breadth above the umbilicus and slightly inclined towards the right side. The patient complained of pain over a considerable extent of the abdomen, but this was more marked in the right renal region, over which area palpation showed that it was most marked. There was slight dyspnea and the patient was decidedly drowsy. There was no edema of the lower limbs nor puffiness of the eyelids. Temperature, 101.5°; pulse, 98; respiration, 20. Auscultation revealed a loud systolic murmur at the cardiac apex, but nothing could be found in the lungs.

Separation of the urine with the Luys instrument gave the following: The urine from the right kidney contains a large amount of pus, many granular casts and much epithelium, albumen 1:1000 by Esbach's tube. From the left kidney the urine contained a few granular casts, albumen a trace, no pus.

By palpation a marked resistence was found in the right renal region, which undoubtedly was an enlarged kidney, while percussion gave complete dullness. The lumbar region was decidedly sensitive on pressure, with marked muscular rigidity.

The patient was closely watched for the next three days, but as the temperature and pulse continued to go up and as the urine commenced to decidedly diminish in amount and uremic symptoms of a mild degree began to manifest themselves, it was decided to operate without delay.

On April 7, under ether, the right kidney was exposed by a long transverse incision. There was considerable edema of the perirenal fat, but the kidney was reached without any particular difficulty. Upon exposing the organ it was found very greatly enlarged and in its middle and at the lower pole were found two abscesses in the cortex, each about the size of a large walnut. After the kidney had been completely freed it was split along its convex border in its entire length. The two abscesses in question were the only pus foci present, but the parenchyma was very hyperemic and presented the macroscopical appearance of an acute parenchymatous nephritis. The renal pelvis was somewhat distended and contained about 30 ccm. of cloudy urine. On account of the evidences of a mild involvement of the left kidney, and given the two distinctly limited pus foci, it was decided to drain the kidney, as I felt that nephrectomy was not justifiable under the circumstances. The renal pelvis and kidney were drained by two good-sized rubber drainage tubes and the perirenal area was lightly packed with iodoform gauze. The renal incision was closed at the upper half of the kidney, the remaining lower half being left open to give exit to the drainage tubes. The fascia and skin were closed excepting for a couple of inches where the gauze and drainage tubes came out.

On the evening following operation the temperature made a decided drop and on the next day it had reached 100° F. The general condition was likewise greatly improved and a free discharge of urine and pus came away through the tubes. Forty-eight hours after the operation labor pains set in and the patient was delivered of a seven months' child after a labor of five hours. The child survived for a few hours only.

From this time on the general condition improved and the amount of urine voided by the bladder varied from 1,500 to 2,000 gm. in twenty-four hours. She began to sleep well and the drowsiness had entirely disappeared. On the sixth day one tube was removed and on the twelfth day following operation the gauze and the remaining tube were taken out. At this time the urine from the diseased kidney contained much less pus and some was collected which, on examination, showed that it contained a fair amount of urea, showing that it had not been functionally destroyed. The skin sutures were removed on the fourteenth day, the wound having closed perfectly.

Seven weeks after the operation there remains only a small fistula which is discharging so little that the dressings are changed only once a day. The urine now contains only a few granular casts, a trace of albumen and very few pus cells. The specific gravity is 1,012 and the amount of urea excreted in twenty-four hours is normal. I have no doubt that this patient will completely regain her health and that the fistula will have completely closed within a short time.

My three cases of pyelonephritis complicating pregnancy have all been pus cases and as yet I have not been fortunate enough to meet with the mild types, so many examples of which have been recorded in literature. From my limited personal experience it would seem to me that these cases are far from being as inoffensive as is generally supposed, but the reverse I believe is true, as far as the prognosis is concerned, in cases of this renal complication developing during the post-partum.

Attention is called to the inestimable value of Luys' separator in this case, because, on account of the advanced pregnancy, ureteral catheterism would have been difficult, if not impossible.

Dr. A. L. Chute, Boston, reported a case of

SMALL FIBROUS OBSTRUCTING PROSTATE.

I wish to report a case belonging to a type that has interested me much of late.

The patient was a man sixty years old who had had bladder symptoms for about ten years; these symptoms began rather mildly, but two years ago they became pretty intense. His bladder was opened at that time and a large stone removed; a slight diaphragm-like bar at the bladder outlet was also found and divided. This man had relief for a time, but a year after operation he began to have his symptoms recur, and in order to be comfortable he was compelled to wear a catheter most of the time. He was practically unable to pass urine voluntarily. He had an infection, presumably with the micrococcus ureæ, that caused a splitting up of the urea and the precipitation of immense amounts of phosphatic material.

I was asked to cystoscope him as it was thought that

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he might have a bladder growth. I found nothing, however, to suggest malignancy, but could see a little projection of the prostate into the bladder, as well as a slight raising of the bladder outlet above the level of the floor. With this patient lying on his back, I was unable to make out any prostate by rectum.

On the 25th of April I removed by the perineal route this man's prostate, getting but 2 dr. of prostatic tissue, and I think I got it out pretty thoroughly. After I had removed all the prostatic tissue I examined the bladder outlet, which was as tight and fibrous as could be. I cut the outlet down to the level of the bladder floor and also made a lateral incision on the left, leaving the bladder outlet as patulous as one commonly sees it after the removal of an hypertrophic prostate. This man passed his urine naturally in fifteen days. He left the hospital ten days ago. The point I want to bring out is that in some cases cutting the bar at the bladder outlet alone does not bring relief. The bar is produced by the prostatic changes and is not the whole obstacle. Likewise, taking out the prostate in a case of this type does not allow the bladder to empty itself. I have had one case recently when I took out all of the prostate and yet the patient could not pass urine. I had to cut the bladder outlet as well. In this last patient the obstructive prostate was also of the small fibrous variety.

Another point that was of interest to me in this case was that this patient had never had any urethral infection. I think many persons believe that the small fibrous prostate *always* follows a gonorrheal infection. I have found that in half of my cases of fibrous prostate that there has been no history of a gonorrhea or an acute prostatitis.

DISCUSSION. (Dr. A. L. Chute's case.)

*Dr. Cumston.* I would like to ask Dr. Chute if he expects necessarily to get a history of a former prostatitis or gonorrhea even when there has been one?

*Dr. Chute.* I must say that if a man tells me that he has never had a gonorrhea I am inclined to believe him. This depends somewhat on the general impression that I draw of the patient's intelligence and truthfulness. I see no reason why we should assume that every man who denies having had gonorrhea is either ignorant or untruthful. I see no reason why we should not accept the patient's story as regards this matter just as we accept it in regard to the occurrence of other diseases.

*Question.* I should like to ask Dr. Chute what he took away in the operation?

*Dr. Chute.* I first exposed the prostate by the usual transverse perineal dissections. I then made an incision through the substance of the prostate into the prostatic urethra. Then after introducing a tractor and pulling the prostate down I removed the presenting surface of the gland and also dug out with scissors and rongeurs all the deeper prostatic tissue that I could get, having the capsule practically an empty shell. I then split the fibrous ring at the bladder outlet, but removed no tissues. I open the urethra through the substance of the prostate because I believe in cases of this sort you are going to destroy the function of the internal sphincter, which I look upon as a sort of secondary line of defense in the way of preventing incontinence; one that is capable of developing a fair degree of control of the bladder, when the function of the cut-off muscle in the membranous urethra, the real sphincter, has been destroyed or injured. It is, therefore, especially important in these cases, when you are going to destroy the internal sphincter, to leave the membranous urethra absolutely alone in order that one may run no risk of injury to the cut-off muscle and its resulting incontinence.

*Question.* I would like to ask if this is the type of case that Dr. Chetwood recommends his operation for?

*Answer.* Yes, the same type that Dr. Chetwood has described and for which he advises the use of his incisor.

*Dr. Hugh Cabot.* I believe it is safer to cut through the bladder outlet with a cautery than with a knife. Dr. Keyes told me he had lost one of these cases from hemorrhage and now always uses a cautery. It seems to me that Dr. Chetwood's instrument is excellent for this purpose.

*Dr. Chute.* In only one of my cases has the cutting of the bladder outlet been attended with any real bleeding. In this instance it was simply annoying. When the operation is carried out as I suggest the field is very accessible and I believe any hemorrhage that might arise could be controlled with ease.

*Dr. Watson.* It happened in my early experience in prostatic work that I invented a cautery but I did not know this particular class of cases at that time. They are most interesting and important and hard to handle. Dr. Abner Post had a case that he reported that I think was one of them. He found almost no prostate. He started in to do a prostatectomy, being beguiled by bad example. He used a median incision and found the vesical orifice so hard that he could not force his finger through it. He took a Bigelow dilator and split it and the fellow got well. Mercier reported similar cases. He chiselled out the middle bar with his punch and also cut through with a cold instrument just as Gouley did later. All these things were things I studied when doing my early prostatic work. I want to ask, Are not a lot of these the cases that are sometimes spoken of as cases of "retention without mechanical obstacle"? I have a case that I believe is of this sort that I am going to operate upon shortly. His prostate is a small, nasty thing; judging from rectal examination, there is little or nothing to remove, but I may find that there is some projection into the bladder when I cystoscope him.

The internal sphincter, at the vesical orifice, does not amount to anything, as far as control of the bladder goes. You do a prostatectomy and you smash everything and yet the patient has control. The internal sphincter controls not a drop of urine, there is no question about it.

DR. R. F. O'NEIL, of Boston, reported a case of

CONTRACTION OF THE BLADDER NECK FOLLOWING AN ACUTE INFLAMMATORY CONDITION, CAUSING BEGINNING URINARY OBSTRUCTION IN A YOUNG MAN.

The patient was a man of twenty-six. First seen in consultation on Oct. 26, 1909, in regard to a swelling in the right side of the perineum corresponding to the position of Cowper's gland. There was moderate tenderness and deep fluctuation. There was a slight urethral discharge. The next day under ether a deep abscess was opened, the cavity admitting the finger tip. Gauze drainage and later on treatment of the urethra by sounds and irrigations was advised. Next seen Jan. 14, 1910, about two and one-half months later, for the reason that the sinus had remained open and had leaked on micturition since a few days after opening the abscess. He has been having sounds and irrigations. For the last month and a half he has been having chills which came on two days after instrumentation, lasted a short time and was all right again in twelve hours. He gets up once at night. There is no day frequency.

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There is some difficulty of micturition. This has been more marked following instrumentation.

*Examination.* — External genitals negative, except for small fistulous opening at site of operation wound. Rectal examination: Prostate small, hard and non-tender. Slight urethral discharge, showing pus, epithelial cells and a few intracellular diplococci. Urine turbid, pale, alkaline, 1,020, albumen trace, urea 1.77, sediment, pus, epithelial cells and bacteria. Examination for tubercle bacilli negative.

Soft catheter passed easily to bladder, — size 16 French,— residual half an ounce. I was unable to pass a sound into the bladder. It felt as if the point were lifting the deep urethra. After considerable difficulty a cystoscope was passed by depressing the ocular end and using a good deal of pressure as the vesical neck was very tight. There was no cystitis. The ureter mouths appeared normal. There was marked beginning trabeculation of the bladder wall, the muscle bundles standing out very distinctly. The examination was short as it caused pain and the patient was quite nervous. He emptied his bladder of the examining fluid with greater ease and a better stream than he had had for months. Five days after the cystoscopy there was some soreness, but the stream was better and the urine clearer than for a long time. Heretofore the urinary difficulty had been increased after instrumentation. There was no chill and very little leaking through the fistula.

On going into his history it was found that about eight months before I had seen him first he had a severe attack of prostatitis with retention of urine requiring bed treatment and catheterization. There was a history of urethral disease for some time previous to this. This attack was followed by a second attack of prostatitis when he was quite sick, and from the history I judge he had had a prostatic abscess which ruptured into the urethra.

I regard this case as one of small contracted prostate following an acute inflammation and causing symptoms of beginning urinary obstruction in a young man as shown by the bladder changes, etc.

I do not know how common this condition is, but believe it is not generally recognized.

I believe in this case there is some pyelitis from the appearance of the urine and the fact that chills had followed unsuccessful attempts to pass sounds, the tissues being injured, causing edema, a consequent increased difficulty of micturition, with some retention of the infected urine.

I think the prognosis is unfavorable without some form of operative treatment. The difficulty of instrumentation is probably due to a change in the direction of the urethra as well as to a contracted bladder neck.

DR. BENJAMIN TENNEY, Boston, reported a case of

CHRONIC PROSTATITIS WITH OPERATION.

My patient was a man of twenty-four who had his first urethral infection in 1905. From that time on he had constant discharge. He reached me after the usual travels of these urethral cases, in 1907. He had pus at the meatus, pus in all urines, discomfort in perineum and rectum, two or three night urinations and a history of attacks of acute pain followed by chill and high temperature which were considered to be malarial. He had an attack of right epididymitis about three months after his infection. He was also impotent.

Examination showed no characteristic Gram-decolorizing diplococci in smears from the urethra, no special enlargement of the para-urethral glands, a prostate moderately large and tender, neither enlargement nor tenderness of either vesicle, good urethral delivery, bladder capacity of 4 oz. and some prostatic obstruction to the catheter, requiring a Coudé. He had a severe chill two days after my examination and again in seven days, evidently not directly due to my examination, and his temperature is said to have run up to 105° with enlarged spleen. Examination of his blood failed to show any plasmodia, but he certainly was a sick-looking young man. After three weeks' observation and my advice to have a perineal section for thorough drainage of his prostate, he disappeared for five months to consult various authorities and take a trip to Europe. During this time his pus was twice tested for tubercle with negative results, he was kept in bed for a time, cystoscoped, and washed and irrigated variously and plentifully. In the fall he returned, consenting to the operation, which was done at the Boothby Hospital Oct. 15.

Perineal section found a rather rotten prostate which was freely drained for nine days and less freely for some weeks after. To say that he has gained 30 lb., has married and has a healthy wife, and that he has had no further chill since the perineal section is both true and satisfactory. This final result passes over the tear into the rectum when clearing the prostate and the resulting Y-shaped fistula which connected the urethra with the rectum and with the perineum and made him uncertain whether gas, feces and urine would excape by their usual exits or by one of the other two.

A second operation under ether and a third with cocaine restored the integrity of the urethra and of the rectum and allowed the external fistula to close. At the second operation the prostate was found to be shrunken into a small fibrous mass which will probably cause retention before long. His urine is not absolutely clear even yet and he has had an epididymitis on the left side within the past month, but there is no visible urethral discharge, his wife is well and he considers himself so.

I have no doubt that there are many men walking about with urethral discharges due to infected prostates of the type of this one which I take to be the same as the type studied by Dr. Alexander. The important point to be reached is, When shall we stop our palliative and expectant or what I call "hopeful" treatment and really get at the infected area with efficient drainage?

I am coming to believe that a urethra running more than six months calls for something more than having its face washed. Continual pus from any other locality is considered a good and sufficient reason for real treatment and I think the probable sterility and urinary obstruction are sufficiently real, even if remote dangers, and call for definite surgical drainage of these infected prostates. Perhaps our neglect of real treatment is one reason why these patients deserve the reputation of being drifters, and perhaps the fault is more ours than theirs.

DR. H. M. CHASE, Boston, reported a case of

PYONEPHROSIS; CONGENITAL CYST — SINGLE KIDNEY.

Boy, age fourteen years, whom I saw in December, 1908. In 1903 he had two attacks of chills and fever with pain on urination; one similar attack in 1907.

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Otherwise in apparently good health until Nov. 12, 1908, when he had two weeks of not feeling well and on Nov. 26, 1908, had chills followed by fever to 105°, severe headache and vomiting.

Urine high colored, very thick, with muddy sediment, sharp pain in the right side after running, considerable pain on urination. Urinates twice at night.

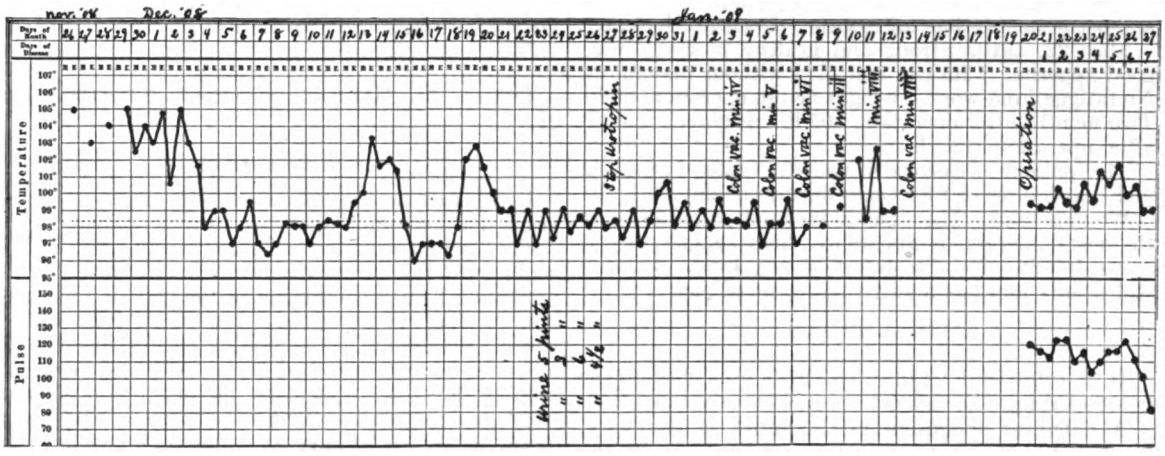
Nov. 27 and 28, continued fever, a great deal of pain in the right side most of the time and sore to the touch. The temperature was recorded by the mother, as seen on the accompanying chart, from Nov. 26, 1908, until Jan. 12, 1909. On Dec. 24, 1908, the history of pus in the urine, temperature, chills and tumor in the region of the right kidney was given me by the family physician, who sent me a catheter specimen of urine.

There was a history of night sweats. No vomiting during the last four weeks. The urine, averaging 4½ pints in twenty-four hours, was voided twice at night and five or six times during the day.

The urine was turbid, odor not foul, light straw, 1,015, acid, albumen present in large quantity. Sugar absent. Large quantity of pus. Urea .88% = 18 gm. Total solids, 68 gm. No tubercle bacilli nor gonococci found, few small caudate and few epithelial cells. No blood seen. Hemoglobin, 95%.

Family unwilling to consider operation. Request to stop urotropin for five days until Jan. 1, 1909, to get urine free from antiseptics.

Jan. 1, specimen of urine sent by mail, no preservative, taken to Dr. Leary's laboratory, growth of colon




Pyonephrosis of single kidney.

The patient's family was strongly opposed to the consideration of any operation.

The specimen was taken to Dr. Leary's laboratory. Dr. Strong reported a turbid fluid with heavy sediment. Growths were started on culture media and a centrifuged specimen was injected into guinea pigs, which resulted in the report of absence of tubercle bacilli. By the microscope nothing could be identified but pus. The growth on milk agar showed staphylococcus albus, one frequently found in urine but not usually or necessarily associated with pus production. It was said to differ from the skin albus of the same name. No streptococci nor colon bacilli found. A vaccine of this culture was used for a few days when inquiry showed that the patient had been given urotropin, gr. x, three times a day. Vaccine and urotropin were stopped.

I saw the patient for the first time on Dec. 27, 1908. A dark-complexioned boy, age fourteen, reticent, fairly well-nourished; appetite fair, tongue slightly coated, bowels regular daily. Heart and lung examination negative. Abdomen soft, no distention nor tenderness. No spleen felt, liver above costal margin.

Left kidney can be felt on deep inspiration (this observation was inaccurate as there was no left kidney). A mass on the right side in the region of the kidney moved with respiration; it was not tender to pressure, the size of my fist, quite freely movable up and down but not laterally, mainly above the crest of the ileum. The mass is in the region where pain has existed.

The tumor was high for appendix, there was no history of pain along the ureter nor into the bladder or penis. The penis, very large for boy of his age, suggested masturbation. Testicles and scrotum negative, rectal examination negative, examination of the spine negative.

bacilli. Dr. Leary said the first culture was inhibited by the urotropin which does not kill the bacteria.

The growth of staphylococci undoubtedly due to contamination, though it is very rarely a cause of bacteriuria and cystitis. Vaccine made of colon bacilli, ½ ccm. = 50 million.

Dose, minims iv, every two days, increasing up to minims viii.

Jan. 12, 1909, reported by letter, normal morning temperature, high fever at night. Patient has seemed to gain in weight and in general conditions. Mass in right side increased.

Urine examination showed approximately the same amount of pus, several washed-out blood cells and a few questionable crystals.

Jan. 13, 1909. Patient has been up about the house every day. Looks better. Chills the last three days. Left kidney palpated (again mistaken).

Mass in right side as before.

Mother says urine clears considerably at times, then when chills, fever and pain come on the urine is much more turbid, with increased sediment. Operation again advised and considered by family.

Jan. 20, 1909. Operation, Dr. Tenney assisting. Transperitoneal nephrectomy contemplated. Incision through right rectus; examination of left side by Dr. Tenney and myself revealed no kidney on that side. Nephrectomy not possible. Incision was closed by layers with catgut.

Right loin incision from twelfth rib toward groin; mass exposed; lower half of kidney a large cyst (dilated pelvis and thin renal wall). Kidney tissue about seven inches long. Sac opened and thin gray fluid evacuated. No stone found; nothing to suggest tuberculosis. Upper half of kidney feels like solid renal tissue.

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The sac wall was removed close to the solid renal tissue, the edges were inverted and sutured with catgut.

Was unable to locate the ureter opening.

Upper pole of the kidney very high under the diaphragm. The lower pole was rotated outward and upward and sutured to the twelfth rib, which straightened the ureter. Two gauze drains inserted into the wound, muscle and skin sutures of catgut.

The chart shows the post-operative temperature.

Feb. 4, 1909, colon vaccine given every two days for two weeks.

On Feb. 7 the urine had cleared greatly but still contained pus. Abdominal wall solid, loin wound solid except for wicks which were gradually removed.

Feb. 21, less pus than before the operation.

Feb. 28, gain in weight of fifteen pounds, more active and better health than for months. Urine much clearer.

May 22, 1910. Strong and healthy in every way, good appetite. Can run and play without discomfort. No fatigue from work. Weight before operation, 90 lb. Two months after operation, 105 lb. Eighteen months after operation, 130 lb.

The patient occasionally urinates once during the night, and three or four times during the day.

Wounds solid. The right kidney not palpable below the costal margin, is apparently high against the rib as we left it. No discomfort of any kind. Urine is still cloudy and has a slight sediment of pus.

*Observations.*

It is important to inquire about and omit drugs before taking the urine for bacterial examination.

A catheter specimen is the most satisfactory. Urotropin inhibits the growth of bacteria in the urine, but does not kill them.

When confident, after careful palpation of the abdomen, of the existence of two kidneys, it is important to verify it by some more definite method before doing any radical operation on either kidney: either by ureteral catherization when practicable, which, by the way, cannot be relied upon as cases of two ureters from a single kidney have been reported, or by exploratory laparotomy.

No vaccine in the presence of mechanical obstruction can be expected to be efficient. If conditions permit, be sure of an anchored kidney with a straight draining ureter.

DISCUSSION. (Dr. H. M. Chase's Case.)

*Dr. Cumston.* This case is rare and remarkable from the pathologist's standpoint. Cases of pyonephrosis would occur where a congenital cyst of the kidney became infected. These cases are occasionally met with, and those that have been reported are autopsy findings. The condition has been found on one side only, I believe, in the large majority of cases. The kidney has been entirely consumed by the process and has been represented by a single sac.

There is another point which I was glad to hear brought out, because opinions differ largely on the question. That is the mobility of the kidney on respiration, some writers stating that it cannot occur. I have been hesitant in putting forward my belief in public, but I am positive that in many cases where the kidney is enlarged, where the organ is not adherent, that the renal gland can be felt easily to follow the movements of respiration. Therefore, when a tumor on one or the other side of the abdomen moves with respiration, it should not be concluded that it is not renal in origin.

*Dr. H. Cabot.* Ureter catheterization does not necessarily show the presence of two kidneys. Within a year I have had ureters catheterized and urine drawn from two ureters, but only one kidney was present at operation.

*Dr. Watson.* In regard to the normal mobility of the kidney. I am surprised, for I thought the fact was generally accepted. I have measured a great many of these kidneys. The amount of movement of the ordinary kidney in respiration is one-half to one and a half inches, in the living.

In regard to the accuracy of ureter catheterization, there are several instances on record of multiple ureters from one or both kidneys which have led to serious errors in diagnosis.

*Question.* I did not understand whether the urine in Dr. Chase's case was free from bacteria.

*Dr. Chase.* It was not.

DR. J. D. BARNEY, of Boston, reported a case of

EPIDIDYMOTOMY.

I wish to report a case of epididymotomy, which as yet is not a common operation in this vicinity.

The patient came to me early in January with an acute posterior urethritis with involvement of the prostate. I tried everything in the way of treatment, but nothing did any good. It went on from bad to worse. Finally an acute epididymitis developed on the left side. I put him to bed at once with poultices, and then switched off to ice-bags; neither produced much effect, and pain and swelling were intense. The patient finally consented to have an epididymotomy five days after the onset of the disease.

The day after operation the temperature was normal; it had been up to 101. The pain was absolutely relieved and the epididymis was only slightly tender. The urethral discharge stopped almost at once. This was not wholly due to the operation, however, for, as you know, it often subsides at once after the onset of an epididymitis.

Twenty-four hours later the right epididymis became involved and after a wait of thirty-six hours this was also opened in the same way. Again the temperature, which had flared up, went down to normal and remained so. In the same way all pain and tenderness left the epididymis.

Owing to the tremendous edema of the scrotum its layers were very difficult to distinguish. In the first operation I did not recognize the tunica vaginalis for some time. On opening the tunica it was found much engorged and contained about 3 dr. of serous fluid. A "chicken-fat" clot, about as large as my thumb, was adherent to the epididymis and testicle, and dense adhesions had formed between the latter structures. The clot was scooped away, leaving a red, bleeding surface on the epididymis. The globus major particularly was involved on each side. Multiple punctures were made with the knife throughout the epididymis. Nothing was found except in the body of the left epididymis, where there were several minute abscesses which exuded a drop of creamy pus containing gonococci. Elsewhere the punctures elicited only free hemorrhage from the congested organ. On the right side no pus could be found, but the fluid in the tunica, the clotted lymph and enormous congestion were the same as on the left.

The operation made a startling difference in this case. About ten days after operation the two epididymes were essentially normal subjectively and objectively. It would require imagination to say that

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there was anything unusual beyond a moderate thickening and induration. The urethral discharge has never reappeared, the frequency has subsided and the prostate is no longer tender and congested.

Now as to the question of sterility, which intervenes in nearly 50% of these cases. I have examined the prostatic secretion several times since operation, but no spermatozoa are to be found. They may appear later. It is quite possible that there is still enough edema and induration of the epididymal tubules to prevent the passage of spermatozoa. Several tests by culture and microscopic examination show no gonococci.

I mention this case because it is a rather rare operation as yet, and although I lay a great deal of stress on the value of ambulatory treatment by means of compression with rubber dam, I think this operation is of the utmost value in cases of exceedingly painful and acute epididymitis. Indeed, I am not at all sure that it should not be done in every case of acute epididymitis. It has a tendency to cut short the course of the urethritis and prostatitis by affording efficient drainage of the seminal ducts. It is claimed to lessen the chances of sterility, but this has not been the case in my patient as yet.

DISCUSSION. (Dr. Barney's Case.)

Dr. Benj. Tenney, Boston. Relief of pain from incision into the swollen tissues of the epididymis is both prompt and permanent. The last patient on whom I have tried it was seen with Dr. A. D. MacLennan. For some time we were uncertain whether we were dealing with a severe right-sided epididymitis and a vesicular abscess or whether there was an appendicitis mixed up with the venereal condition. As always, there was great tenderness over the right vesicle on rectal examination, which may also be found when the inflamed appendix lies in the vesicorectal fossa. As often happens, there was tenderness above the inguinal canal up to the anterior superior spine. The absence of any smooth swelling about the vesicle and the slight rigidity of the right abdominal muscles led us in the right direction. Removal of the appendix with incision into the epididymis quickly stopped the pain and vomiting. The scrotal incision was still granulating when he left the hospital at the end of ten days. The tenderness was all gone and the induration was less than I have ever seen it in so short a time. I am sure incision is the treatment for all patients who will permit it.

Dr. Hugh Cabot read a paper on

A CASE OF MYXO-FIBRO-SARCOMA ORIGINATING IN THE GREAT OMENTUM WITH INVOLVEMENT OF THE BLADDER AND SMALL INTESTINE.*

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In Memory of Dr. Baumgarten. — The Alumni Association of the Medical Department of Washington University has appointed a committee to raise funds for the erection of a memorial tablet of the late Dr. Gustav Baumgarten, to be placed in the Medical Library Building beside those in memory of Drs. Gregory and Boisliniere. — *Jour. Am. Med. Asso.*

*See Journal, Dec. 1, 1910, p. 841.

# Medical Progress.

## RECENT PROGRESS IN GENITO-URINARY SURGERY.

BY FRANCIS S. WATSON, M.D., AND PAUL THORNDIKE, M.D.

### EXPERIMENTAL RESEARCH.

Barney[1] has investigated the effect of intraperitoneal division of one ureter experimentally from the pathological and the bacteriological standpoints from operations on 40 animals and clinically from 6 cases in the literature and 29 cases collected in answers to personal letters to surgeons. It appears that "the abdomen may bear without damage and even, in some cases, without severe reaction, the effusion of a certain amount of sterile urine"; that efficient adhesions may be promptly formed; that the divided ureter may become quickly occluded by adhesions or blood clot; that general peritonitis probably occurs in those cases where such occlusion does not take place or where the urine is septic. Dogs and cats always recovered and showed nearly always at autopsy adhesions between omentum or gut and the wound, and in one half the cases free abdominal fluid containing urea. The peritoneal cavity gave positive cultures in all dogs and cats and one half of the rabbits. The organism was practically always a coccus.

### TUBERCULOSIS.

From an extensive experimental investigation of the routes of extension of urogenital tuberculosis in rabbits, Sawamura[2] reaches the following conclusions:

(*a*) Extension of vesical and genital tuberculosis to the kidney seldom occurs.

(*b*) Direct ascending infection of the kidneys with tuberculosis from bladder, without obstruction of the urinary stream, is possible only when a relatively high pressure prevails in the contractile bladder and an antiperistaltic movement of the ureter sets in.

(*c*) Ascending renal tuberculosis may be produced by tuberculous involvement of the lower part of the ureter, with consequent stricture, stagnation and dilatation.

(*d*) Lymphogenic ascending renal tuberculosis theoretically cannot be denied, but was not surely determined.

(*e*) Tuberculosis of the testicle and epididymis as a rule extends urethrally.

(*f*) It may also extend by the lymphatics, though more rarely.

(*g*) Tuberculosis of the epididymis often extends downward to the testicle.

(*h*) Tuberculosis of the testicle and epididymis often remains for a long time local, without spreading to the rest of the genital apparatus.

(*i*) In primary tuberculosis of the testicle, the spermatic cord is often also affected.

(*j*) The lymphatics of the testicle mostly lead to the lymph nodes along the inferior vena cava at the level of the termination of the internal spermatic vein, and those of the epididymis to the nodes along the hypogastric vessels.

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(*k*) The proximal part of the vas may be infected by tubercle bacilli from the urine.

(*l*) Tuberculosis of the epididymis may arise from descending tuberculosis of the urinary passages when the orifice or lumen of the vas is plugged with granulation tissue, and tubercle bacilli are transported to the testicle from stagnation of the secretion and exudate.

(*m*) Ascending tuberculosis of the epididymis without involvement of the vas is rare, though possible.

### KIDNEY TRANSPLANTATION.

Carrel[3] reports at length the technic of his autoplastic transplantation of the kidney and the experimental investigations which led up to its successful performance, and summarizes as follows the facts attained by this important piece of research:

(1) A dog's kidney, which has been extirpated, washed and reimplanted, is capable of functionating in an entirely normal fashion and for a long time after operation. In case of simultaneous removal of the other kidney it may successfully carry on the entire renal excretory function.

(2) The technical procedure of kidney transplantation is at present sufficiently good to avoid every immediate or later complication proceeding from the blood vessels.

(3) The tolerance of the operative interference of the temporary interruption of the circulation, of the perfusion and of the severing of nerves is shown by the excellent function of the organ more than eight months after operation.

### SCLEROTIC PARANEPHRITIS.

In this form of renal inflammation the kidney becomes embedded in a mass of fibrous tissue. Operation is indicated because, by the time the process has reached this stage, the organ has practically ceased to functionate and its removal is indicated. Zuckerkandl[4] shells out the organ, making no effort to remove its capsule with it. He calls the procedure intracapsular nephrectomy.

### VACCINES.

Hartwell and Streeter[5] and Hartwell,[6] conclude that bacterial vaccines

(1) Are efficient in relieving symptoms in mild forms of cystitis, but have a less marked effect on pyuria.

(2) Are without value in severe forms of cystitis.

(3) Probably hasten the recovery of pyelitis.

(4) Have no influence on bacteriuria.

Hartwell thinks that vaccines "will probably furnish us a means of attacking post-operative foci, such as an infected ureter stump, which are difficult otherwise to clear up.

Eyre and Stewart[7] found that in acute gonorrhea the gonococcus vaccine is markedly toxic and exerts a profound influence. A stock vaccine comprising a dozen different stains gives results only slightly inferior to an autogenous vaccine.

In a carefully carried out research with many cases, Schmidt[8] concludes among other things that serum therapy in gonorrheal cases seems to be used to the greatest advantage in acute or subacute gonorrheal toxemic cases — those cases which are too often referred to as "gonorrheal rheumatism"; that serum is of no practical value in the inveterate long-standing cases; the serum-therapy has not been of as great value in metastatic or gonococcemic conditions. The vaccine mode of therapy, he says, has shown satisfactory results in true gonorrheal arthritic conditions — when undoubted metastatic conditions are present and where a gonococcemia is probably present. In the very acute attacks especially good results were noted.

### TUBERCULIN.

The belief that tuberculin has a real place in the therapy of surgical tuberculosis seems to be steadily gaining ground as a result of the work which is being done in the clinics of this country and of Europe.

Sanborn[9] summarizes the indications for its use as follows:

(1) In case of organs involved which cannot be extirpated, such as the bladder;

(2) In case of any organ in which tuberculosis is very early and in which disintegration has not taken place to any considerable extent;

(3) In case of tuberculosis of both kidneys where it is deemed unwise to operate either;

(4) Post-operatively in case that it is apparent that all tuberculous tissue was not removed or where organs that were involved could not well be extirpated;

(5) In any case where bladder involvement is present;

(6) In any case where there is a suspicion that tuberculous tissue has been left behind;

While Hugh Cabot,[10] in describing the practice at the Massachusetts General Hospital, discriminates between cases in which the disease has been apparently removed, as in unilateral kidney infections without bladder involvement, and those cases in which some disease remains although its principal focus has been removed.

In the former class tuberculin is used after the method advised by Tondeau, while in the latter the injections are continued at a maximum dose until the patient is free from symptoms or until six months have elapsed.

### ETIOLOGIES.

In a discussion of the etiology and pathology of the *undescended testis* the writer[11] insists that the imperfections in an undescended testis are the cause of and not the result of its failure to reach the scrotum.

In a good paper on kidney and ureteral stone, Bevan[12] insists that *renal colic* is due to a greatly increased intrarenal tension and that the passage of a stone does not necessarily cause any pain. He cites a case in which the progress of a stone through the ureter was watched by successive x-rays and no pain was experienced.

The writer[13] throws aside the commonly mentioned causes for *varicocele* and stanchly

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upholds the belief that there is a congenital diathesis which serves as the etiological factor.

Paul [14] considers that *prostatic hypertrophy* is not due to a chronic inflammation of septic or specific type, nor to a neoplasm, but that it is an involution change similar in character to that which occurs in the mammary gland. He presents his evidence at length in support of this theory.

CANCER OF PROSTATE.

A careful study of 111 cases by Young [15] and a comparison with cases of benign enlargement of the prostate have added much to our knowledge of this disease. He finds that it is a far commoner disease than was ever believed possible; that often a diagnosis can be made before the disease has passed the confines of the prostatic capsule; that there is no evidence to show that these cases are degenerative from benign hypertrophies.

FUNCTION OF KIDNEYS.

The writer [16] had the unusual opportunity of repeated and long-continued study of the urine secretion in a case of ectopia vesicæ when naturally it was not necessary or possible to use a cystoscope. He reached the following interesting conclusions.

The "diuretic quotient," or average amount secreted per minute, varied usually between 1 and 2. Almost half an hour after taking a considerable amount of fluid there was rapid rise in the diuresis, which fell in another half hour to its former level; with beer it lasted two hours. These observations show how rapidly the body gets rid of surplus fluid. In case, however, little fluid had been taken the day before, the ingested liquid was stored up and no increase in diuresis took place. The secretion of urine was smaller and more irregular in the lying than in the upright and Fowler's position. Urine spurted from the ureter about once in ten seconds, and about .3 ccm. at a time.

CHEMISTRY OF URINE.

Cantelli [17] describes the chemical characteristics of a group of substances which he isolated from the urines of certain patients and says that the presence of these substances in the urine may often give evidence of a renal lesion at a time when albumin and other indications of a nephritis are entirely lacking.

NEW TECHNIC.

A new method for the removal of bladder growths must always command attention at a time when the present methods at our disposal are so unsatisfactory in their end results. Beer [18] describes a technic he is beginning to use which consists in using high-frequency currents through a Nitze double-catheter cystoscope. He calls his paper a brief preliminary report, but in it he has distinctly demonstrated the technical possibility of his method of work.

*Renal Pelviotomy.*

Mayo [19] shows how a flap of fatty fascia may be used in closing the wound in the renal pelvis in such a way as to give this procedure a wider field of usefulness.

*Operations upon Upper End of Ureter.*

Cabot [20] describes a new technic for reaching stones which lodge high up in the ureter just below the kidney pelvis and again at a point at the pelvic brim as follows:

The ureter in the first situation is, I believe, best reached by an oblique muscle-splitting incision, starting at about the tip of the twelfth rib and running downward and forward to a point about midway between the anterior superior spine of the ilium and the umbilicus. The fibers of the external oblique are separated in line of the incision, those of the internal oblique and transversalis practically at right angles to the incision. If the separation of the muscles is freely made, good access is obtained to the upper half of the ureter. After the muscles have been separated, the peritoneum is pushed back and the ureter readily found lying upon the psoas muscle, though its tendency to be turned up with the peritoneum should not be forgotten.

Stones situated at the brim of the pelvis may be conveniently reached by an incision in the same line as the one above described, but beginning where the other stopped at a point nearly midway between the anterior superior spine of the illum and umbilicus and continued downward to the junction of the inner and middle thirds of Poupart's ligament. Here again the peritoneum may be pushed back and the ureter readily found at the point where it crosses the bifurcation of the common iliac artery.

*Operation on the Lower End of the Ureter.*

Gibson [21] describes technic of an operation for the purpose of reaching the lower portion of the ureter by an extraperitoneal route. A curved incision is made extending at first horizontally outward from just above the symphysis pubis, bending upward along Poupart's ligament to a vertical direction opposite the anterior superior spine of the ileum. By retraction of muscles and incision of the transversalis fascia the peritoneum is exposed; the peritoneum is then pushed upward exposing the ureter, which can then be drawn up into the external wound. The ureter after incision can be closed by a double row of sutures and the wound closed without drainage. Two cases are reported.

*Operation for Cancer of Bladder Fundus.*

Hagner [22] describes an operation for these somewhat rare cases in which the removal of the growth is accomplished with no injury to the tumor mass.

The following is a description of the operation as employed in one case: The bladder was irrigated, and, on account of bleeding, adrenalin 1: 10,000 was instilled and allowed to remain five minutes. The bladder was then distended with 350 ccm. of salt solution, and a Nitze cystoscope was introduced. This was held in place by an assistant, while a suprapubic incision down to the bladder wall was made. The prevesical fat was well separated and the tissues well retracted by wide lateral retractors so as to give a good

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exposure of the bladder wall. The growth was then inspected through the cystoscope, the right hand holding the cystoscope; with the left, a needle was pressed on the fundus of the bladder and the dimpling caused thereby was readily seen through the cystoscope. The needle was carried first to the left of the growth at a sufficient distance to give a margin of healthy bladder wall; it was then plunged into the bladder, being held in place by an assistant. The same procedure was carried out at the right of the growth and at the lower border. An attempt to place a needle above would have penetrated the parietal peritoneum, as this was involved in the growth. A sharp knife was then carried to the outer side of the three needles placed around the growth, the portion of the bladder wall to be removed being clamped at its cut edge as soon as the incision was started. The bladder wall containing the growth was lifted up by the clamp and held by an assistant. The fluid left in the bladder was removed by a large syringe through the suprapubic wound to prevent its entrance into the peritoneal cavity. The incision in the bladder wall was then carried upward into the peritoneal cavity and a portion of parietal peritoneum covering the growth was removed. The bladder and peritoneal wounds were then closed by two rows of sutures, a suprapubic drain being left in the bladder.

### RADIOGRAPHY.

*Renal Pelvis.*

After considerable investigation the authors[23] found that a 50% solution of cargentos (a colloidal silver oxide) gave x-ray shadows of the greatest density and was absolutely non-irritating as a fluid for diagnostic injection of the renal pelvis. In order to avoid over-distention of the pelvis, and consequent colic, they have used gravity injection, allowing the solution to run into the ureteral catheter from a graduated burette elevated two feet until the flow ceases.

*Stones in Lower End of Ureter.*

Cabot[24] describes and illustrates with photographs the reasons why stones in this location may fail to show even with good technic. His suggestions if confirmed by further experience should prove of real value.

*A Case of Filarial Hematochyluria.*

The authors,[25] after quoting one or two similar cases, report a case of their own which was apparently cured by quinine and the x-ray.

### NEW INSTRUMENTS AND APPARATUS.

*An Improved Method of Measuring the Capacity of the Renal Pelvis.*

Baker[26] describes an instrument for the above purpose by means of which one can get an accurate idea of the capacity of the kidney pelvis under known conditions of pressure, thus obviating the tendency to produce renal colic as a result of uneven and unknown amounts of pressure which must necessarily result from the use of a syringe to force the fluid through a catheter.

*A Device for the Prevention of Bleeding in Bladder Operatons.*

The writers[27] describe their method of operating on prostatic and bladder cases after binding all four limbs of the patient with gauze roller bandages so completely and tightly that the operations are done with all four extremities blue. In this simple way the writers claim practically bloodless operations with no bad after-effects, and they earnestly recommend the procedure to the profession.

*A Cysto-Urethroscope.*

Stimulated by the success of the Goldschmidt instrument in examinations of the deep urethra, the writer[28] describes another and, to his idea, a better instrument which employs the Nitze type of indirect or right-angled telescope. He claims his instrument does away with the partial field, distorted image and the traumatism caused by the large window of the older instrument.

*A New Catheter Container.*

Barney[29] describes an ingenious, cheap and apparently efficient container for ureteral catheters, consisting chiefly of a piece of rubber tubing one or two inches longer than the instruments it is to contain.

### RARE AND INTERESTING CASES.

*Ureterocele.*

The writer[30] details two cases of this very rare occurrence and reviews twenty-two others. He says the conditions should be suspected when a cord is found in a hernial sac at operation.

*Family Hematuria.*

Aitken[31] reports a family of seventeen persons, ten of whom have suffered from hematuria. In spite of an apparently prevalent opinion to the contrary, he insists that a very guarded prognosis should be given in such cases.

### TOTAL EXTIRPATION OF THE BLADDER COMBINED WITH HYSTERECTOMY AND IMPLANTATION OF THE URETERS IN THE LOIN.

Martin[32] reports having performed the above operation upon a negress of forty-three years of age, in a case of cancer of the lower part of the uterus involving the floor of the bladder and the orifice of the right ureter. The operation was performed as follows:

Tamponade of the vagina, Trendelenburg position, medium laparotomy. Ligature of the cervix, of the round ligament and of the uterine vessels. Ureters exposed and divided 8 cm. from the bladder; divided ends of the ureters carried to the lumbar surface and drawn out a short distance through the incision made in either loin to allow of their being passed through the skin. A small catheter was passed into each of the ureters thus placed and secured there. The uterus, bladder and neighboring portion of the vagina were then removed and the peritoneal cavity shut off by a lock stitch.

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Two days later the catheters were removed because of the insufficient drainage afforded by them, the ends of the ureters were split longitudinally and attached to the skin. The patient was able to keep the loins clean and could resume an active occupation. The ultimate result is not mentioned.

### REPORT OF A CASE OF PRIMARY TUBERCULOSIS OF THE BLADDER.[33]

The patient was a man of sixty-two years of age. Thirty years before entering the hospital he had a traumatic rupture of the urethra, extravasation of urine and perineal fistulæ which persisted up to the present time. In 1908, external perineal urethrotomy was performed. Convalescence was uneventful up to the fourth week; at this time a sudden rise of temperature and severe dyspnea occurred and the patient very shortly afterward died.

The *autopsy* revealed the following conditions: Fatty degeneration of the heart. Emphysema of the lungs. On the apex of the left lung a small focus of cicatricial hardening which was entirely encapsulated. The spleen and the capsule of the liver and the diaphragm presented large and thick cartilaginous plaques. Carcinoma of the stomach at the pylorus. The *bladder* contained a purulent, cloudy liquid. Muscular columns were very marked upon the surface. Scattered over the entire inner surface were numbers of small projections of a grayish and slightly translucent appearance of the size of a millet seed and surrounded by circles of hyperemia. The center of these projecting masses was whitish and opaque. The epithelium was destroyed at these points. On a level with the entrance of the urethra a number of these individual projections had run together forming an irregular ulcer of about 1 cm. in diameter which was also surrounded by a circle of hyperemia. The prostate was hypertrophied and the size of a small apple.

Microscopic examination of the small bodies described above showed small rounded masses of leucocytes infiltrating the submucosa and surrounding numerous and very characteristic giant cells. These cells were very large and their nuclei were arranged "*en calotte.*" The nodules presented clearly the typical appearance of tubercle. They did not find necrosis in any of the different microscopic sections of the nodules, which fact would seem to indicate that they were of recent origin. The only other tuberculous process that could be found anywhere in the body was the small focus of fibrous tissue of long standing in the apex of the left lung, which showed no softening and which was thoroughly encapsulated. There was no sign of a tuberculous process, recent or ancient, in any organ of the genito-urinary tract or in any other part of the body, and no sign of miliary tubercle elsewhere to offer an explanation that the lesions of the bladder could have originated by hematogenous infection from some other focus of the disease; on the contrary, the disposition of the vesical tubercles, which were more numerous and which had united in one place into a superficial ulcer near the internal orifice of the urethra and, becoming fewer on the sides of the organ and finally being absent at its summit, indicates that the bacillus entered the bladder and infected it from the urethra. Mouchet thinks it probable that the bacillus gained entrance to the bladder from the fistulous tracts in the deep urethra which connected it with the surface of the perineum.

### THE PATHOLOGY AND THERAPY OF ANURIA.

In 1903, Kreps[34] published several cases of calculous anuria in which he relieved the condition by ureteral catheterization of both kidneys. The urine drawn from the unobstructed kidney in these cases immediately after the overcoming of the anuria was perfectly normal, which fact Kreps regarded as a proof of the existence of a reflex anuria affecting the unobstructed organ and having its source from an inhibitory influence originating and transmitted from the obstructed kidney. In the publication referred to above Kreps reports some other cases of anuria which still further go to prove the existence of a reflex anuria. In the first of these the same experience with regard to the demonstration of the normal condition of the unobstructed kidney being subjected to a reflex anuria was repeated. A further point of interest was added in this instance by demonstrating the condition on two different occasions with an interval of three years in the same patient, the left or unobstructed organ on both occasions having its function suppressed by reflex inhibition proceeding from the right kidney which was obstructed by a calculus in the ureter.

In the second case the obstruction of one side was produced probably by the blocking of one ureter with blood clot. Here, too, the second or unobstructed kidney was shown to be normal by urinary tests.

In three instances of obstructive anuria, both of the kidneys were more or less pathological. They illustrate the relief of the anuria by means of the use of ureteral catheters and injections through them of glycerine, but are not demonstrations of reflex anuria of an unobstructed and normal kidney.

### PHYSIOLOGICAL FUNCTION OF THE PROSTATE.

The statements made by the authors[35] with regard to the physiological functions of the organ relate to three separate questions, the first being the office of the muscular part of the gland, the second its external secretion and the third its internal secretion.

With respect to the first, they conclude that, although a muscular organ, it has but little to do with the closure of the bladder, but that its muscular constituents are concerned in the expulsion of the secretion of the glandular portion of it. This explusion of the secretion takes place at the termination of coitus and is produced through stimulation of the branches of the sacral plexus transmitted to the hypogastric plexus and which reaches the prostate through these intermediate branches.

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Lamare is quoted as holding the view that the prostate does not perform any glandular function until puberty; that the glandular activity reaches its culminating point between the ages of twenty-six and thirty, and that somewhere between forty-five and fifty years of age the fibromuscular elements increase at the expense of the glandular ones.

With reference to the relation of the prostate to the genital function, the following facts are recalled: That the development of the prostate in young animals remains arrested at whatever point it may have reached when castration is performed upon them; again, that the glandular portion of the organ atrophies and disappears when the testicles are removed. Casper found that the center of the prostate where it surrounds the urethra in a dog which had not reached puberty had no glandular structure. According to Walker, the injection of testicular extract in male dogs which had been castrated, delayed or prevented atrophy of the prostate, while the atrophy proceeded progressively when no injection was given: the development of the prostatic glands proceeds almost absolutely in correspondence with that of the testicles.

### A CASE OF RENAL CALCULUS PRODUCING NO SYMPTOMS FOR FIFTY YEARS.[36]

Patient, a man of sixty years, had had typical attacks of renal colic on the right side as a child. These had then ceased and there had been no evidence pointing to renal calculus for the next fifty years. At the end of that time there was a return of the colic on the same side accompanied by hematuria. The patient was operated upon. The right kidney found to be wholly destroyed by a stone almost as large as the fist, which was composed largely of phosphatic salts. The kidney was removed and the patient made a good recovery.


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# Reports of Societies.

## AMERICAN LARYNGOLOGICAL ASSOCIATION.

THIRTY-SECOND ANNUAL MEETING, HELD IN WASHINGTON, D. C., MAY 3, 4, 5, 1910.

JAMES E. LOGAN, M.D., *President.*
JAMES E. NEWCOMB, *Secretary.*

(Continued from No. 24, p. 920.)

### X. PERSONAL EXPERIENCE IN THE INTRANASAL TREATMENT OF ACCESSORY SINUS DISEASE, WITH REPORTS OF CASES.

DR. GEORGE L. RICHARDS.

Read by title. No discussion.

### XI. CASE REPORTS ILLUSTRATING OCULAR AFFECTIONS DUE TO INTRANASAL AND ACCESSORY SINUS DISEASE.

DR. LEWIS A. COFFIN, New York.

DR. FRANK J. PARKER, New York, said that he had had the privilege of working with Dr. Coffin and had taken all these fields with the self-recording perimeter under the best conditions of daylight. The disks used were 10 mm. square. The fields were taken several times, and some were taken by the house surgeon also; few if any errors were found, and these were very slight. A line of work of this sort will be a great help to the ophthalmologist; some cases go from one to another, and no one can fit them with glasses. Two of these were just such cases. They were normal with the ophthalmoscope. There is a class of cases with optic atrophy, and it has been almost a rule that if no reason can be found for the condition, the patient is put upon iodides. It is probable that many of these cases that have been injured by iodide of potassium have been due to sinus disease, especially of the ethmoid and sphenoid.

Some of these cases of Dr. Coffin did not have sinus trouble, but had intranasal swelling of the turbinates, etc., with a normal optic nerve. These cases should be divided into two classes, one due to circulatory disturbances, and the other to peri-neuritis causing swelling, and this, beginning optic atrophy. These cases show first in the peripheral fields where there is less visual acuity. He expressed the hope that others would work along this line. Dr. Coffin and he were anxious to find its value in diagnosis. Up to the present time it would seem to be of great value.

DR. CORNELIUS G. COAKLEY, New York, said that two months since he had had three patients with sinus involvement whose eyes were examined by Dr. Wheeler, and in none was there any contraction of the visual field. In another case of marked unilateral involvement both Dr. Wheeler and Dr. Parker examined the patient's eyes and they were found to be practically normal; so that while the condition presented by Dr. Coffin undoubtedly occurs in some cases, we are just at the beginning of the subject. It is a very valuable symptom, and is evidently caused by some form of interference with the vision.

DR. H. L. SWAIN, New Haven, expressed deep appreciation of the manner in which Dr. Coffin had presented the subject, and of the help afforded by Dr. Parker's admirable illustrations. He himself had recently been studying what Onodi says in relation to the optic nerve to the walls of the sphenoid and the posterior ethmoid sinuses, and feels that we are almost open to censure that we have not appreciated this

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before. It is not any wonder that the optic nerve is involved; the wonder is that it ever escapes with this serious pressure inside of this cavity.

Dr. Greenfield Sluder, St. Louis, cited the history of a patient illustrating the involvement of the optic nerve as expressed by Dr. Swain.

Dr. Coffin, closing the discussion, emphasized Dr. Coakley's remark that we are only at the beginning of this line of investigation. So far, he himself has not found a case positively diagnosed as having disease in the ethmoid or sphenoid that has not shown contraction in relation to the apparent involvement. The case reported by Dr. Sluder was probably a case of circulatory stasis, which seems to be the condition in a majority of the cases — pressure due to circulatory disturbances.

Afternoon Session at 2.30 p. m., May 4, 1910.

Joint session with the Climatological and Otological Societies at the New Willard Hotel. General topic for Discussion: "Vaccine Therapy."

The Climatological Society represented by Drs. J. A. Miller and J. M. King.

The Otological Society by Drs. H. C. Reik and B. A. Randall; and

The Laryngological Association by Drs. H. S. Birkett, C. G. Coakley, and F. C. Cobb.

Dr. Randall said that the application of opsonic treatment by vaccines to diseases of the ear has been too limited and carried on by too few investigators to have reached definite results. Hardly a hundred individual cases are recorded, and while these are encouraging, especially to enthusiasts, there are too many loopholes for any estimate of them to carry conviction to clear minds. The permanence or uniformity of success which should distinguish a monumental improvement in therapy cannot yet be considered established, while some of the reports are open to suspicion of being none too well posted or else too pessimistic as to the older measures. Closer scrutiny of the instances of its employment will probably give greater confidence in the possibilities of the method, and it was to be hoped that this joint consideration of the subject will serve to crystallize into more available shape its practical applications, and that growing experience will show more frequent realizations of the hopes and claims of the enthusiasts.

### VACCINE THERAPY IN OTOLOGY.

By Henry O. Reik, M.D., Associate in Ophthalmology and Otology in the Johns Hopkins University; Surgeon in the Baltimore Eye, Ear and Throat Hospital, Baltimore, Md.

After a summary of what has been accomplished by the use of vaccines in otology and a careful consideration of the various conditions encountered, the author offers the following conclusions and suggestions in regard to the relation of vaccine therapy to otology:

1. The employment of vaccine therapy in otology, although having had but a limited trial so far, has been attended by such successful results as to warrant us in feeling greatly encouraged.

2. Furunculosis, with its recognized tendency to the formation of boils in crops, seems to have responded more promptly and satisfactorily to this form of treatment than to any other, and, in tuberculosis of the middle ear, a condition heretofore so baffling to the otologists, there would seem to be good reason to believe that at last we have a controlling, curative remedy.

3. Looking into the future, we have held out to us the enticing prospect of being able to cure without operation a larger percentage of our cases of persistent, chronic purulent otitis media, or, failing in that, of insuring success for the operative treatment of this affection.

4. The aural conditions to which this new form of treatment would appear to be reasonably applicable are the treatment of chronic suppurative otitis media; the preparation of patients for operation, raising the opsonic index in order to facilitate rapid healing after obliteration of the gross lesions; and the post-operative treatment of mastoiditis and its complications where healing is delayed and the patient is unable to construct new tissue without aid.

5. While the outlook is hopeful in these several directions, we must not grow too enthusiastic as yet. We are perhaps justified in some degree of optimism, but not in enthusiasm. Let us try the method further, with fairness, and judiciously, not expecting the impossible from it, for it will not entirely displace any other form of treatment; no matter how valuable it ultimately becomes, it will only be an additional therapeutic measure at our command.

### THE VALUE OF VACCINE TREATMENT OF CHRONIC INFLAMMATORY DISEASES OF THE ACCESSORY SINUSES OF THE NOSE.

By H. S. Birkett, M.D., Professor of Oto-laryngology, McGill University; Oto-laryngologist, Royal Victoria Hospital, Montreal; and J. C. Meakins, M. D., Demonstrator in Clinical Medicine and Pathology, McGill University; Clinical Assistant in Medicine, Royal Victoria Hospital, Montreal.

The history of the application of the principle that immunity follows an attack of certain infectious diseases was sketched from its first recognition by Jenner and the later work of Pasteur, followed by the development of "the cellular" and "the humoral" views of immunity maintained by Metchnikoff and Ehrlich, the reconciliation of these two views by Denys and Leclef, and the demonstration by Wright that the blood plasma contains a substance which must first act upon the bacteria before the leucocytes can ingest them.

The authors claim that chronic and localized infections are eminently suited for vaccine treatment, and after a careful study of the anatomy and pathology of the accessory sinuses of the nose, the application of treatment by vaccine therapy by others and the personal observation of four detailed cases, they reach the following conclusions:

1. Vaccine treatment will sterilize the accessory sinuses of the nose when the subject of chronic disease.

2. The chronic discharge of mucus from the accessory sinuses of the nose is not so much due to bacterial infection as to habit hypersecretion.

3. The symptoms are not due to infection, but to hypersecretion and retention.

4. Although vaccine therapy is a valuable adjunct to treatment, the establishment of free drainage by the removal of polypoid masses and redundant mucous membrane is more important.

5. The cases of sinusitis showing a tendency to become chronic should be treated early by homologous vaccines.

Dr. Cornelius G. Coakley, New York, took a less hopeful view of vaccine therapy than did Dr. Birkett. His results had led him to the following conclusions:

1. The bacterial flora of the sinuses consist of the following organisms: Streptococcus pyogenes, micrococcus albus and aureus, staphylococcus pyogenes albus and aureus and bacillus mucosus capsulatus.

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2. The opsonic index has been unsuitable, either as a means of clinical diagnosis or as a criterion for further treatment.

3. That vaccinations made in varying strength have not been followed by those changes in the opsonic index which would be expected were this method of treatment one on which we could rely in practical work.

4. The amount of time necessary to carry out fully a careful opsonic treatment are not only beyond that which the ordinary practitioner could afford to spend, but are, with the present technic and status of the subject, quite out of proportion to the value of the information which one might derive from such procedure.

The therapeutic results of his own cases were, in his own judgment, absolutely worthless. He could not say, on the other hand, that any harm had been done to his patients. Before the use of vaccines, the chronic patients had frequent periods of improvement of their symptoms and periods of aggravation. In a few instances some improvement was noted after the first or second injection, but later the discharge and other symptoms returned as they had done under other plans of treatment.

DR. FREDERIC C. COBB, Boston, had had good results in clearing up chronic ear discharge, but not such good results in nasal cases, although the anatomical conditions, so far as closed cavities draining through narrow openings were concerned, were apparently alike. In a series of atrophic rhinitis cases, however, the results were better. A bacillus of which he could find no description was found in all cases. From it a vaccine was made and injections varying in amount from 150,000,000 to 500,000,000 were given. A very general improvement in odor and amount of crusts and discharge had resulted, yet in no instance could an absolute cure be claimed. Before commencing vaccine treatment these patients were in the habit of using nasal washes, and this treatment was not changed while carrying out the injections except that before periodical examinations they were not allowed to use the douche for twelve hours. The patients themselves were enthusiastic over the results of treatment. Autogenous vaccines seemed to yield better [results than stock vaccines. The same general degree of results had followed in sinus cases, that is, improvement, but no absolute cure.

(*To be continued.*)

## Book Review.

*Hookworm Disease. Etiology, Pathology, Diagnosis, Prognosis, Prophylaxis and Treatment.* By GEORGE DOCK, A.M., M.D., Professor of the Theory and Practice of Medicine, Medical Department, Tulane University of Louisiana, New Orleans; and CHARLES C. BASS, M.D., Instructor of Clinical Microscopy and Clinical Medicine, Medical Department, Tulane University of Louisiana, New Orleans. Illustrated with forty-nine special engravings and colored plate. Pp. 250. St. Louis: C. V. Mosby Company. 1910.

In view of the recent recognition that hook worm disease exists in a large part of the United States, and that it is among the most important of diseases in the South, this description of the disease by Dock and Bass deserves wide attention. The disease is believed to have reached Europe from Egypt; its occurrence in Europe has been chiefly among miners, laborers in tunnels, and brick workers. In America an epidemic probably of this disease was described in Brazil in 1648; the earliest mention of it in the United States was in 1808. The parasite was first described in 1782 in animals, but was not connected with the disease in man until 1853, and its connection with human anemia first received general recognition in 1877. Ashford, in 1899, showed the great prevalence of hookworm infection in Porto Rico, and Stiles, in 1901, showed it to be widespread in the United States. Stiles further demonstrated that the American hookworm was a species distinct from that of the old world, which, however, also occurs in America.

The parasite requires for its growth high temperature and moisture. The disease is, therefore, one of southern regions and of deep mines. It occurs mainly among those who have intimate relations to the soil, particularly those with bare feet. The biology of the parasite is minutely described. Of great interest and importance is the demonstration of the mode of entrance to the human body, not as was formerly supposed by the alimentary tract, but through the skin. This process is accompanied by the symptom familiarly known as "ground itch."

The pathology of the disease is chiefly that of anemia and the resulting abnormalities of oxygen metabolism. It is possible, however, that the lack of development, when the disease occurs in early life, may be due not so much to the anemia as to the local lesions in the intestine.

The symptoms are variable and may be slight or absent. Most common is this very mild form of the disease where symptoms are not noticed; the chief importance of these cases is as carriers of the parasite. Next most common is the type of disease classed as mild, manifested by moderate pallor and anemia, and lowered vitality and energy, and in children somewhat impaired growth. The third type is the severe type where the anemia, weakness, dyspnea, edema and impaired growth are too marked to be overlooked. This type is relatively rare in the United States, but in Porto Rico has caused a large percentage of all deaths in the island.

The diagnosis rests chiefly upon the demonstration of ova in the stools; the process of examination for these is, therefore, minutely described. Eosinophilia of over 8% has been shown to occur in the blood of 94% of cases.

Much stress is very properly laid upon the prophylaxis of the disease under three headings: (1) the extermination of the worms in human carriers, even those without symptoms; (2) the prevention of dissemination of larvæ by the invariable use of proper privies; and (3) education in precautions against infection.

To remove the disease the thymol treatment properly carried out has proved extremely effectual.

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THE BOSTON

Medical and Surgical Journal.

THURSDAY, DECEMBER 22, 1910

*A Journal of Medicine, Surgery and Allied Sciences, published at Boston, weekly, by the undersigned.*

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## READING FOR PHYSICIANS.

MEDICINE has long been known as one of the learned professions, and physicians have been looked to as wise men, not only in the care of the sick, but in a broad general knowledge of literature,— and of scientific literature especially. The earlier generations had such literary knowledge, because knowledge of medicine implied knowledge of old authorities. Moreover, a few years ago the total available literature of medicine was small compared with what we now know. Then there was the occasional physician, like Arbuthnot, or Brown, or Holmes, who contributed to general literature, and helped by such contributing to impress the public with a sense of the wide interests of physicians.

We have changed all that. We are no longer a learned profession in the old sense, — rarely as individuals are we widely learned. In the aggregate, however, our knowledge of nature and of her processes is incomparably greater than formerly it was. Special students of special problems have worked out the grand total of present knowledge. In spite of specialism, however, and the fumbling prophecies of a few years back, general practitioners still flourish among us. They are mostly earnest, over-worked men, well educated so far as that is possible in these complicated times; and they struggle to keep abreast of multitudinous progress. They struggle vainly. No man can gather and digest all the new things. The general practitioner, the general medcal reader, is in a state of intellectual dyspnea. The hard routine of his daily round and the collecting of his fees is exhausting enough, but he is asked in addition to keep elaborate bedside notes, to execute numberless laboratory tests, to consult specialists, to subscribe to a half dozen medical journals and compendiums of practice, and to buy the new books. Especially must he take the journals and the books, he is told; otherwise will he be put to shame before his fellows, and soon be classed as a back number. These are grievous obligations. They are impossible. No general practitioner meets them. If he makes the claim, pass him quickly by, for he tries to deceive you. Vast numbers of toiling practitioners, however, endeavor to meet these impossible demands. Go into the office of a busy practitioner; you will find his table loaded with unopened mail — journals months old; and his bookshelves lined with volumes which presumably he will never read.

The remedy is easy and obvious. He needs a few, not many, good journals. Several good, standard, up-to-date journals will give him a speaking acquaintance with progress. These he will read at least in part. He should buy those books only which are favorably *reviewed* in a responsible journal. The art of the honest reviewer fortunately is not yet dead.

Let us then take heart and fresh counsel; and let us believe that opportunities for learning still linger among us, if only our energies be kept unimpaired and our efforts be directed toward a definite end.

## PREVENTION OF ABUSE OF MEDICAL CHARITY.

A CIRCULAR is at hand, issued by the committee of the Chicago Medical Society on the abuse of Medical Charities, relating to the movement in Chicago for the regulation and improvement of institutional medical charity. This movement, which has already excited considerable interest throughout the country, aims at correcting economic abuses in hospital administration, improving the service to the poor in free institutions, and preventing the hospitalization of members of the community who are not deserving objects of medical charity. The widespread abuse of such charity is well known, and medical pauperization is its inevitable result. To check this abuse, the committee proposes the establishment of a headquarters of investigation, where every applicant for free institutional medical charity should undergo thorough inquiry and scrutiny, which will be carefully and permanently recorded. The project, which is to be supported at first by private subscription, deserves enthusiastic encouragement by the profession. Demonstration of its successful application should be followed by its adoption in other similarly situated communities.

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## ADVANCING STANDARDS OF MEDICAL EDUCATION.

THE effect of raising the standard of medical education is well illustrated by the recent experience of the University of Michigan. Two years ago its medical department established the entrance requirement of at least two years of previous collegiate study. The number of students in the entering medical class immediately fell from 144 in 1908 to 36 in 1909. In 1910, however, the number has risen to 58. This is precisely what was to be expected, nor should the advocates of increased efficiency of medical education be discouraged thereby. In every walk of life the individual must either meet the demands of the advancing civilization which is his environment or else go to the wall. In medicine, therefore, physicians must be continuously more highly trained than heretofore. Such specialization will mean, as it does everywhere else in nature, diminution in number but increase in efficiency of the survivors. The result will be a gain to the community and to the dignity and progress of medical science.

## INTERNATIONAL OPIUM CONFERENCE.

INTELLIGENCE from Washington, D. C., states that plans are completed for an international opium conference at the Hague on May 30, 1911. The countries to be represented are the United States, China, Great Britain, France, Germany, Italy, Japan, The Netherlands, Persia, Portugal, Russia and Siam. The conference will deal with the problem of cocaine and morphine, as well as that of opium. The extent of the illicit traffic in these drugs, and their illegitimate use, is hardly realized by the respectable public. In the year 1909, 185,000 oz. of cocaine were imported into the United States, of which only 5,000 were used for legitimate medical purposes, the remainder being consumed by habitués. Of the 75,000 lb. of opium brought into this country annually, probably over three fourths are employed by opium smokers and eaters. The suppression of such vices in civilized countries should be far easier than to check the improper use of alcohol, and positive results towards this end may be hoped from concerted action following the opium conference next spring.

## MEDICAL NOTES.

ABATEMENT OF BUBONIC PLAGUE IN MANCHURIA. — It is reported from St. Petersburg that there is a marked abatement of bubonic plague in Manchuria and that no new cases of the disease had occurred in that country during the three days ending Dec. 15.

AWARD OF THE LA GRANGE PRIZE. — It is reported from Brussels that on Dec. 15 the Royal Academy of Belgium awarded the Charles La Grange prize in physics to Dr. L. A. Bauer, director of the department of terrestrial magnetism at the Carnegie Institution, Washington, D. C.

RELATION OF COMPLEXION TO TROPICAL DISEASE. — An investigation is said to be in progress by a board of United States army surgeons as to the relative susceptibility of persons with light and with dark complexions to heat-stroke and various tropical diseases. *A priori* it should seem that brunettes should be more tolerant of insolation than blondes, but immunity to infections would hardly seem likely to be affected by such a factor.

PURE MILK AND INFANT MORTALITY. — The value of a pure milk supply in cutting down infant mortality is well illustrated by the percentage of deaths under one year of age in Berlin. In the decade from 1870 to 1880 this figure was 30%; from 1880 to 1890, it was 27.1%; from 1890 to 1900, 23.2%; from 1900 to 1910, only 19%. This reduction, though doubtless due in part to other factors, has taken place *pari passu* with the extension of the system, begun in 1880 by the philanthropist Bolle, of supplying good milk to the poor at moderate price.

AMENDMENTS TO THE ROCKEFELLER FOUNDATION BILL. — In a recent issue of the JOURNAL we referred to certain objections that had been raised to the federal incorporation of the Rockefeller Foundation. To meet these objections, several amendments have been made to the bill for the chartering of the foundation, now before Congress, giving the government a voice in the selection of the trustees, requiring the annual distribution of the entire income and limiting the total amount of the fund at any time to $100,000,000. It is hoped that with these restrictions there may be no further opposition to the establishment of the foundation.

A PROLIFIC FAMILY. — Report from Richmond, Ind., states that Mrs. Jason Bonner, of New Castle, Ind., has recently given birth to her twenty-eighth child. Of her large family of offspring, twenty-one are at present living.

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Mrs. Bonner is now forty-five years of age and her husband forty-nine. It is not stated how long they have been married.

The Typhoid Epidemic at Annapolis. — During the week ending Dec. 17 only one new case of typhoid fever was reported at the United States Naval Academy at Annapolis, Md., making a total of 30 patients now under treatment for the disease. There have as yet been no deaths, though one cadet is stated to be critically ill. A commission of four naval surgeons has been appointed by the Secretary of the Navy to make further investigation and official report as to the probable cause of the epidemic.

Two Centenarians. — Mrs. Elizabeth Shoemaker, who died on Dec. 16 at her home near Dupois, Pa., was locally reputed to have been born in 1806. She is said to have retained her physical and mental vigor until a very short time ago.

Dinah Hicks, a negro nurse, who died last week at New Rochelle, N. Y., was alleged to be one hundred and ten years of age. She was born a slave in Virginia. For the past thirty years she had lived in the family of a justice of the supreme court.

An Apparatus for Inhalation of Alcohol.— Unofficial report from London describes the invention, by Dr. Leonard Erskine Hill, of an apparatus providing for the inhalation of a mixed vapor of oxygen, water and alcohol. This apparatus, which is intended for use in the treatment of pneumonia, is based on the theory that in this way stimulation may be supplied to the heart better than by the route of gastric absorption. The soundness of this theory and the efficacy of the apparatus remain to be tested by experience. It would seem that this method might be open to the objection of the irritant action of alcohol on diseased or susceptible lung tissue.

Progress of the Cholera Epidemics. — During the week ending Dec. 17, 22 new cases and 7 deaths of Asiatic cholera were reported from Italy, as against 29 cases and 11 deaths the preceding week.

Report from Funchal, Madeira, states that the cholera epidemic in that island is still active. At Santa Cruz, on Dec. 15, a number of arrests were made of rioters who resisted the measures taken by the government to check further spread of the infection. This action illustrates the difficulty experienced by preventive medicine in making headway against popular ignorance and superstition, a difficulty not confined solely to countries with a population of primitive or uncivilized inhabitants.

Dr. Osler's Challenge to the Anti-Vaccinationists. — In an article in the *American Magazine*, on the service to the community of the control and abatement of disease and pain by medical science, Dr. William Osler says in consideration of the value of vaccination: "A great deal of literature has been distributed casting discredit upon the value of vaccination in the prevention of smallpox. I do not see how any one who has gone through epidemics as I have, or who is familiar with the history of the subject, and who has any capacity left for clear judgment, can doubt its value. Some months ago I was twitted by the editor of the *Journal of the Anti-Vaccination League* for 'a curious silence' on this subject. I would like to issue a Mount Carmel-like challenge to any ten unvaccinated priests of Baal. I will go into the next severe epidemic with ten selected vaccinated persons and ten selected unvaccinated persons. I should prefer to choose the latter — three members of parliament, three anti-vaccination doctors, if they could be found, and four anti-vaccination propagandists. And I will make this promise — neither to jeer nor to jibe when they catch the disease, but to look after them as brothers, and for the four or five who are certain to die I will try to arrange the funerals with all the pomp and ceremony of an anti-vaccination demonstration."

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston.— For the week ending at noon, Dec. 20, 1910, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 35, scarlatina 32, typhoid fever 6, measles 36, smallpox 0, tuberculosis 45.

The death-rate of the reported deaths for the week ending Dec. 20, 1910, was 17.49.

Boston Mortality Statistics. —The total number of deaths reported to the Board of Health for the week ending Saturday, noon, Dec. 17, 1910, was 217, against 215 the corresponding week of last year, showing an increase of 2 deaths and making the death-rate for the week 16.79. Of this number 118 were males and 99 were females; 212 were white and 5 colored; 122 were born in the United States, 93 in foreign countries and 2 unknown; 40 were of American parentage, 148 of foreign parentage and 29 unknown. The number of cases and deaths from infectious dis-

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eases reported this week is as follows: Diphtheria, 36 cases and 4 deaths; scarlatina, 33 cases and 1 death; typhoid fever, 2 cases and 2 deaths; measles, 26 cases and 1 death; tuberculosis, 62 cases and 24 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 34, whooping cough 2, heart disease 19, bronchitis 3. There were 11 deaths from violent causes. The number of children who died under one year was 29; the number under five years 46. The number of persons who died over sixty years of age was 67. The deaths in public institutions were 85. Cerebrospinal meningitis, 1 case and 1 death.

Of the above infectious diseases the following were non-residents: Consumption, 2 cases. Scarlet fever, 2 cases. Diphtheria, 2 cases and 1 death. Measles, 1 death.

Deducting deaths of non-residents, the total is 202 and the death-rate is then 15.63.

DIPHTHERIA AT BEVERLY. — Two new cases of diphtheria were reported last week among pupils at the Beverly Farms (Mass.) Grade School, as a result of which the school was temporarily closed. This is the second time during the present session that the school has been closed on account of diphtheria. The building will be thoroughly disinfected before being reopened.

SCARLET FEVER IN QUINCY. — A minor epidemic of scarlet fever is in progress at Quincy, Mass. Twelve cases among schoolchildren have been reported, nearly all traceable to infection from a single family. The local board of health has ordered the school in which the cases occurred closed indefinitely, and has also directed the meetings of the various Sunday-school classes to be suspended for at least a fortnight.

MILK COMMISSION, SUFFOLK DISTRICT MEDICAL SOCIETY. — The Suffolk District Medical Milk Commission, starting Jan. 1, 1911, will be as follows:

Dr. James Marsh Jackson, 230 Beacon St., Boston, chairman; Dr. George A. Craigin, 18 Hereford St., Boston; Dr. Robert L. DeNormandie, 357 Marlborough St., Boston; Dr. B. L. Arms, 30 Huntington Ave., City Bacteriological Laboratory; Dr. Fritz B. Talbot, 311 Beacon St., Boston; Dr. Richard M. Smith, 222 Marlborough St., Boston, secretary.

A LIVING CENTENARIAN. — Mrs. Polly Johnson, of East Somerville, Mass., who is said to have been born on Dec. 16, 1810, at Malone, N. Y., celebrated last week the supposed centennial anniversary of her birth. She has four children and four grandchildren surviving. Her health is excellent, and she attributes its persistent vigor to her lifelong habit of rising at six o'clock in the morning.

CHRISTMAS CELEBRATION OF THE INDUSTRIAL SCHOOL. — The annual Christmas celebration of the Industrial School for Crippled and Deformed Children will be held at the institution building on Friday, Dec. 23.

BEQUEST TO QUINCY HOSPITAL. — Among several charitable bequests in the will of the late Peter B. Turner, of Quincy, Mass., filed for probate last week at the Norfolk Probate Court, was one of $100 to the Quincy City Hospital.

NEW ENGLAND ALUMNI OF NEW YORK MEDICAL COLLEGE. — The eighth annual meeting of the New England Alumni Association of the New York Medical College was held last week in Boston. Among the guests and speakers was Dr. William M. Polk, of New York City. Dr. Elgin W. Jones, of Lynn, Mass., was elected president of the association for the ensuing year; Dr. J. Henry Woods, of Brookline, Mass., secretary; and Dr. James H. Stuart, of Boston, treasurer.

PENALTIES FOR VIOLATION OF PURE FOOD LAWS. — Last week a farmer living near Ware, Mass., pleaded guilty before the local district court to the charge of watering the milk sold from his dairy. Another dealer of the vicinity had his license revoked for repeated violation of the milk rules.

Before the municipal court in Boston last week a dealer from Littleton, Mass., was fined $100 for selling to a wholesale firm a carload of adulterated vinegar.

TUBERCULOSIS EXHIBIT AT CHICOPEE. — The local board of health at Chicopee, Mass., has recently accepted from the tuberculosis committee of The Massachusetts Medical Society the loan of a tuberculosis exhibit for use in the Chicopee public schools. The exhibit consists of large wooden frames in which are photographs illustrating conditions conducive to consumption and methods for its prevention. Its showing will be accompanied by an explanatory lecture by a member of the board of health. The value of these loan exhibits in the education of the public as to the nature and avoidability of tuberculosis is believed to be very great.

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Expectoration and Concealed Weapons. — The prosecution of the campaign in Boston against promiscuous expectoration continues, though with somewhat abated vigor. Every prisoner arrested for spitting is searched as a routine, and one of the interesting revelations of the process has been the number of concealed weapons discovered. The apprehension of these is much more lucrative to the government than conviction for spitting, since the fine for carrying a loaded revolver is $25; that for expectoration, not more than $5. Under certain circumstances, however, the prevalence of the latter habit is likely to be far more dangerous to the community than the former.

NEW YORK.

Health Conditions. — Notwithstanding the unfavorable conditions incident to its multitude of tenement houses with their congested population, the health of the city of New York is at present better than that of the rural portion of the state. In the month of October the death-rate in New York was 14.0, while in the non-urban population it was 15.8. In the other cities of the state the death-rate was 14.7. In October of last year the urban death-rate was 15.6, and the rural, 16.2.

A Fund for St. Mary's Hospital, Hoboken. — The committee organized to obtain a thanksgiving fund for St. Mary's Hospital, Hoboken, in token of the appreciation of the citizens of New York for the care given by the sisters in charge of the hospital to Mayor Gaynor after the attempt on his life last summer, presented the fund to the sisters on Dec. 18. The total amount was $15,184, and was handed to the sister superior in the form of two checks, one for $5,000 and the other for $10,184. The $5,000 check is to endow a bed in honor of the mayor, while the rest of the money is to be expended at the discretion of the sisters. The presentation was made by John D. Crimmins, chairman of the committee, who was followed by Corporation Counsel Archibald R. Watson, representing Mayor Gaynor, and the gift was accepted by Father Ahne on behalf of the sisters. A letter was also read from the mayor, in which he expressed his regret at not being present, stating that he had to be out of town at the time for the benefit of his health.

Bequests. — Among other charitable bequests in the will of the late Isaac Stern, a prominent New York merchant, are $10,000 to Mount Sinai Hospital and $4,000 to the Montefiore Home and Hospital for Chronic Invalids. During his lifetime also Mr. Stern was a liberal contributor to these and other Jewish charities.

Subscription for American Red Cross Society. — New York City has now completed its subscription of $500,000 for the American Red Cross Society, the amount of the proposed $2,000,000 endowment fund which was apportioned to it on the basis of 10 cents per capita of the population.

Ancient Hebrew Sanitation. — The public lecture at Columbia University on Dec. 5 was by Dr. D. C. Pease, sanitary expert of the Board of Water Supply, on "Insect Carriers of Disease," and in the course of it he made the statement that the many burnt offerings and sacrificial ceremonies of the ancient Hebrews were designed with a practical view to exterminating the fly and other insect pests from the meat of slaughtered cattle.

Laboratory for Examination of Chemicals. — At the opening of the meeting of the American Institute of Chemical Engineers, on Dec. 7, John Purray Mitchell, president of the Board of Aldermen, in an address welcoming the members of the institute to the city, announced that it had been decided by the municipal authorities to establish a fully equipped laboratory for the examination of all chemicals purchased by the city, to be managed by a board of directors of the highest professional standing. This step has been urged for some time, as the present public laboratories are not equipped to do the work satisfactorily, and the city often pays a high price for poor material. With such a laboratory, managed in the manner contemplated, such a thing as graft or favoritism in the granting of contracts would be practically impossible.

Damages for Loss of Life. — After lengthy negotiations the New York Central Railroad and the estate of Spencer Trask have come to an agreement in regard to the damages to be paid for the loss of the financier's life in a railway accident on Dec. 31, 1909. The amount settled upon is $60,000, the largest sum ever known to have been paid by a railroad corporation for the death of a passenger, and the award is based on the value of the deceased's personal relations with his various and extensive business undertakings. The widow's share is $32,000, and it is announced that of this amount, $24,000 is to be given by her to the village of Saratoga Springs as "a fitting dedication of the money to the town to which Mr.

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Trask devoted many years of zealous service, and for which in the end he sacrificed his life." The remaining $8,000 she presents to the Bethesda Protestant Episcopal Church, at Saratoga, to complete Mr. Trask's gift of a parish house.

DETECTION OF A MALINGERER. — Mrs. Anna Strula, who had been on trial for two days in the Court of General Sessions, charged with swindling the New York Central Railroad out of $500, pleaded guilty on Dec. 2 before half the prosecution's witnesses had testified. She admitted that in less than four years she had received more than $5,000 damages from seventeen railroad and steamboat companies by claiming to have been injured through the carelessness of their employees. The woman had pleaded guilty to the same charge two weeks previously, but, after being told that the judge would grant her no leniency, she decided to stand trial. A number of physicians who had examined her at the time she made the claim against the New York Central expressed the opinion that the injuries she alleged she had received from a fall at the 125th Street Station were not caused by the fall. In nearly all the claims made by her the cause of her slipping and falling was a banana skin. This won for her the title, "the banana-peel artist," and she actually had a bag filled with the skins when she was arrested.

MEETING, SOCIETY OF MEDICAL JURISPRUDENCE. — At the annual meeting of the Society of Medical Jurisprudence, held on Dec. 12, the following officers were elected: President, Alfred E. Omman; Vice-President, Reynold Webb Wilcox, M.D.; Recording Secretary, Oscar W. Erhorn; Correspondng Secretary, Charles P. Blaney; Treasurer, John C. West. The subject of the evening's discussion was the abuse of the writ of habeas corpus in freeing insane persons dangerous to the community and to themselves, and a resolution was adopted recommending an amendment of the criminal law to the effect that criminals who are now "acquited because insane" should be adjudged "guilty, but insane." A committee was also appointed to confer with a similar committee from the State Bar Association, with a view to securing the proposed change by the action of the legislature. Addresses on the discharge of lunatics by habeas corpus proceedings were made by Frederick A. Fenning, of the Washington bar; Dr. William A. White, superintendent of the Government Hospital for the Insane at Washington; and John Brooks Leavitt, LL.D., chairman of the committee on the commitment and discharge of the criminally insane of the New York City Bar Association. In the course of his remarks the last-named said: "Our struggle in this state is, not to keep insane men from getting out of, so much as to keep sane men from getting into, the asylums, in order to escape the penalty of their crime. . . . Whip these facts into a hypothetical question, pay a heavy medical fee for a specialist to frame it, let him swear the client into insanity and six months later jauntily swear him out, and the criminal escapes scott free, except for the fees! . . . The crime has been done and it makes no difference to society if it has been done by a lunatic or a sane man; and, as a protection to society, the criminal, sane or insane, must be confined. Then let his lawyer, in that little private consultation after the murder, bid his client choose alternatives: 'If you want to be insane, you will be locked up for life. If you want to be sane, you will be hanged. Now choose.' Then there will be no large legal fees and no large medical fees, and no one will be the worse except the lawyers and doctors."

## Current Literature.

MEDICAL RECORD.

DEC. 10, 1910.

1. ROBINOVITCH, L. G. *I. Electric Sleep and Analgesia by Means of Frequently Interrupted Direct Currents applied through Closed Wired Circuits. II. Electric Sleep in Paths of Displacement Currents: Unipolar and Wireless Method. Animal Myogram Experiments.*
2. BARRINGER, T. B. *The Normal and Pathological Liver Pulses.*
3. KILIANI, O. *A Further Report on the Treatment of Facial Neuralgia by Alcohol Injections.*
4. *SCHULTZE, E. C. *A Preliminary Report on the Importance in Scarlatina of an Early Bacterial Examination of the Secretion from the Postnasal Region.*
5. POND, A. M. *Fractures of the Skull.*
6. SCHIEMANN, H. *Carbolic Acid Injections in Piles and Goiter.*
7. SALLOM, A. K. *Preliminary Report of a Statistical Analysis of over Thirty-two Thousand Cases of Scarlet Fever.*

4. From investigations extending over three years, Schultze is convinced that the danger of infection in scarlet fever lies more in the throat and nasal passages than in the scales of desquamation. He has examined thousands of cultures taken from the pharynx in patients clinically ill with this disease, and in about 80% of them he has demonstrated a large coccus, which stains very deeply with Löffler's alkaline methylene blue. He has recovered micro-organisms morphologically identical with this coccus from blood, skin and aural pus of scarlet fever patients. He, therefore, urges the importance of early bacteriologic examination of the nasopharyngeal secretion in all non-diphtheritic sore throats. [L. D. C.]

NEW YORK MEDICAL JOURNAL.

DEC. 10, 1910.

1. BALLENGER, E. G. *"606," or Dioxydiamido-arsenobenzol.*
2. BURR, C. W. *Hospital Day Address.*
3. MARKLEY, P. H. *Some Remarks on the Differential Diagnosis of Typhoid Fever.*

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4. Mayer, E. E. *The Present Status of the Psychoneuroses and of Psychotherapy.*
5. *Clowe, C. F. *Acute Primary Polymyositis, with Report of a Case.*
6. Martin, E. *Our Experience with Vaccine Therapy in Acute Infections.*
7. Ward, R. F. *Some Surgical Considerations of Non-Malignant Ovaries.*
8. Whitall, J. D. *Report of a Case of Pelvic Peritonitis Complicated by Post-operative Hysteria.*
9. Goldsmith, M. *A Case of Hepatic Syphilis.*

5. Clowe believes that acute primary polymyositis is a clinical entity. The early symptoms are malaise, weakness and indefinite pains in various parts of the body. Later the limbs become edematous and cyanosed, the subcutaneous tissues swollen and the skin cold. When the edema subsides the muscles are tender and have a hard, doughy feel. Soon after this contractures appear and finally the muscles atrophy. The extremities are affected first, then the chest, abdomen, neck and throat. There is no involvement of nerves.

This disease is probably infectious. It is most likely to be confounded with multiple neuritis and trichinosis, and may simulate rheumatism, typhoid fever and osteomyelitis. The prognosis is not good. Attacks are often fatal, the greatest danger being involvement of the myocardium or of the muscles of deglutition. Permanent disability is to be expected in most cases. [L. D. C.]

The Journal of the American Medical Association.

Dec. 10, 1910.

1. *Anders, J. M. *Use of Typhoid Vaccines in Typhoid Fever.*
2. Tennant, C. E. *Fundamental Principle underlying the Treatment of Wounds on the Body Surface.*
3. Parsons, J. H. *Some Effects of Bright Light on the Eyes.*
4. *Miller, J. L. *Physiologic Action, Uses and Abuses of Alcohol in the Circulatory Disturbances of the Acute Infections.*
5. *Boos, W. F. *Magnesium Poisoning. The Study of Ten Cases.*
6. Frick, G. *Different Forms of Mediastinal Pleurisy, with Report of Three Cases.*
7. Gant, O. J. *Traumatic Rupture of Fixed Portion of the Male Urethra.*
8. *Elsner, H. L. *The New Treatment of Syphilis: Ehrlich-Hata. Observations and Results.*
9. Burrows, M. T. *The Cultivation of the Tissues of the Chick Embryo outside the Body.*
10. Goldsborough, F. C., and Ainley, F. C. *The Renal Activity in Pregnant and Puerperal Women as Revealed by the Phenosulphonaphthalein Tests.*
11. Brown, R. *Obstruction of Bowel. Diell's Crisis.*
12. Moorehead, E. L. *Extracerebellar Tumor.*

1. Anders considers that vaccine therapy in the very acute stages of typhoid may be dangerous. It is, however, valuable, as a means of prophylaxis, to prevent relapses in the convalescing stages, to combat local infections with the typhoid bacillus, as in bone suppurations, and for the removal of typhoid bacilli from typhoid carriers.

4. Miller summarizes his observations on the use of alcohol in acute infections as follows: The impairment of the vascular regulating mechanism is more apparent than active disturbance of the heart. Alcohol in small amounts acts as a cardiovascular stimulant, but larger amounts in individuals not addicted to its use invariably act as cardiovascular depressant by paralyzing the vasomotor center. It is not possible to determine the amount in each case which will act as a stimulant rather than as depressant, and hence the drug is unsafe to use in most cases.

5. Boos summarizes his observations on magnesium poisoning as follows: Magnesium sulphate in bulk or in concentrated solution is absorbed, in part at least, from the gastro-intestinal tract into the blood. If a sufficient amount is absorbed in a given time, poisoning will result; of ten cases reported, six resulted fatally. The symptoms and autopsy findings agree very well with those obtained in animals after the intravenous use of this drug. On account of the slowness of excretion from the system, magnesium sulphate may produce poisoning from its cumulative effect if given repeatedly in concentrated solution; this is particularly true in obstructive cases. Large doses of normal saline solution given intravenously are the antidote. The subcutaneous use of this drug to produce catharsis as proposed by Wade is not only absolutely irrational, but dangerous.

8. Elsner speaks as follows of Ehrlich's new remedy for syphilis, "606": The spirochete pallida is positively destroyed and the living contagion of syphilis is promptly removed by this drug. It promptly affects visible and palpable syphilitic lesions and removes deep-seated gummata; it stays the destructive ulcerations and causes their healing in a surprisingly short time; it is more rapid in its effect on specific disease than any other known remedy. It cannot replace cicatricial tissue, nor can it affect chronic degenerative conditions of the nervous system. In all cases it causes a leucocytosis and the formation of antibodies. It materially modifies and in most cases ultimately negatives the Wassermann reaction. It unquestionably floods the circulation with endotoxins resulting from the death of millions of spirochete, and in all probability an antitoxin is developed in the blood serum. It ought not to be given to ambulatory patients. Patients receiving "606" should be kept in bed seven days under close observation. Second injections should not be given less than eight weeks after the first. Patients with any other infection besides the present syphilis should not be injected. [E. H. R.]

The American Journal of the Medical Sciences.

November, 1910.

1. *Magnus-Levy, A. *Uric Acid in Gout.*
2. *James, W. B., and Williams, H. B. *The Electrocardiogram in Clinical Medicine. II. The Electrocardiogram in Some Familiar Diseases of the Heart.*
3. *Brem, W. V., and Zeiler, A. H. *Ipecac in the Treatment of Intestinal Amebiasis.*
4. *Skinner, C. E. *The Treatment of Arthritis Deformans.*
5. *Pool, E. H. *The Leg and Arm Phenomena in Tetany.*
6. *Landis, H. R. M., and Mumford, S. A. *The Significance of Cardiorespiratory and Subclavian Artery Murmurs.*
7. *Allyn, H. B. *The Prognosis in Chronic Valvular Disease of the Heart.*
8. *Hall, J. N. *Intestinal Obstruction.*
9. *Weisenburg, T. H., and Müller, G. P. *Idiopathic Circumscribed Spinal Serous Meningitis.*
10. Sutton, R. L. *Dermatitis Herpetiformis in Early Childhood.*
11. *Ross, G. C. *Retention Cysts of the Kidney.*

1. Magnus-Levy's article is an exhaustive discussion of the theories of the pathological physiology of gout, concluding that in the present state of our knowledge we are forced to the belief in a retention of uric acid due to damaged function of the kidneys as the only solution of the problem. The many objections to this theory are, however, fully pointed out, and our lack of positive evidence is made plain. In treatment it is shown that colchicum and salicylate have an opposite action, the latter materially increasing the excretion of uric acid while the former does not increase it and may diminish it. It is suggested that while colchicum has seemed more effectual in affording immediate relief, the use of salicylate may in the long run prove more desirable. The use of alkalies is regarded as theoretically undesirable. Falkenstein's hydrochloric acid treatment is recommended for further trial.

2. James and Williams publish the second division of their report on the use of the electrocardiogram, containing a description of findings in cases where the muscular action of the heart is abnormal. Their records show the curves obtained in hypertrophy, in sinus irregularity, in extrasystoles, both auricular and ventricular, in absolute arrhythmia and in digitalis heart block. The tracings in absolute arrhythmia are of chief interest since they show waves believed to be due to fibrillation of the auricle, but give no evidence of the late contraction of the auricle which Mackenzie has described in such cases, and, therefore, throw doubt upon Mackenzie's theory of the nature of this

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irregularity. It is to be regretted that the electrocardiogram is so complicated and expensive that it cannot be more generally employed, since work such as has been carried out by James and Williams gives promise of important advances.

3. Brem and Zeiler, of the Colon Hospital, Canal Zone, report that, after discouraging experience in the treatment of amebic dysentery by other methods, the ipecac treatment gave complete success in all of eight cases followed from six weeks to five and one-half months, and in three other cases followed for a shorter period. The use of salol-coated pills seems to have been essential to success, since it was impossible to give sufficient doses of ipecac except in these without causing violent vomiting. A salol coat one-sixteenth inch thick seemed best to insure both against solution in the stomach and against failure to dissolve before expulsion from the colon. The best method of administration seems to be to give 60 or 80 gr. at bedtime on the first night and to diminish the dose by 5 gr. each night until a dose of 10 gr. is reached, after which it is discontinued and a permanent cure may be expected. The patient should be at rest in bed and on liquid diet. No milk or solid food should be given for at least six hours previous to the ipecac, and no liquids for three hours before it.

4. Skinner's article is a careful description of the measures which he employs in the treatment of arthritis deformans, or atrophic arthritis. Recognizing as possible etiological factors (1) trophoneurosis, (2) infection, (3) autotoxemia, and (4) depressed cerebrospinal function as result of systemic toxemia from any cause, or possibly abnormal function of ductless glands, he considers as chief therapeutic indications (1) to close possible avenues of infection; (2) to improve general and local nutrition; (3) to accentuate elimination of katabolic products; and (4) to limit the formation of autotoxins. The measures by which he aims to improve general metabolism and body function, the general hot-air bath, electricity in various forms, hydrotherapy, are described in detail. The routine application of the treatment to the individual case is as follows. Rest in bed for at least ten hours out of twenty-four. Diet, generous, but with avoidance of excess of meat or fish. Strychnine and iron before meals, cod-liver oil after meals. Mineral water before breakfast, if needed for constipation. Hot-air bath, central galvanization, vibration and hot and cold douche, each one to three times a week. Static electricity to affected joints at least once daily; high-freqeuency currents may replace some static applications. For relief of pain, baking or ice-cap or cold compresses covered with oiled silk may be tried. Bier's hyperemia is not recommended. Salicyl compounds may give relief. In nocturnal pain induced by muscular spasm, strontium bromide is useful. In the acute stages rest is to be enforced; later, gradually increased passive and active motion are to be instituted, but forcible manipulations with the idea of breaking up adhesions have been shown by clinical experience to be harmful in these cases. Emphasis is laid upon the importance of instituting treatment in the earlier stages of the disease.

5. Pool calls attention to the occurrence in tetany of contractions in muscles of the leg or arm induced by positions which stretch the sciatic nerve or the brachial plexus, appearing in about one and one-half minutes after the beginning of the test. Since the author first described these phenomena in 1907, others have independently observed them. It is urged that their occurrence be further studied as of possible value as a clinical sign.

6. Landis and Mumford have collected 70 cases in which cardiorespiratory murmurs were heard, not as a result of severe exercise; 45 of these cases were tuberculous. Of 31 cases where a subclavian murmur was heard, 20 were tuberculous.

7. Allyn, from a study of 63 cases of valvular heart disease, observed over long periods up to twenty years, concludes that the prognosis in valvular disease in private practice is much better than is generally realized. The mere existence of a lesion in one who leads a temperate life with well-regulated activities may never cause symptoms. It is only when enlargement and subjective symptoms appear that the prognosis is to be considered grave.

8. Hall's article is an analysis of fifty-two cases of intestinal obstruction, with a brief discussion of findings. It is of value as a review of the subject, but reveals no notable novelties.

9. Weisenburg and Müller call attention to the disease of circumscribed spinal serous meningitis and emphasize the importance of its early recognition, since operation may give complete relief, whereas if the condition is not recognized, an inoperable tumor of the spinal cord is usually supposed to exist. The symptoms closely resemble those of tumor, but differ in their slower development and wider range of involvement, not so definitely localized to nerve root distribution, and, perhaps most important, in a variability in sensory and motor findings at different examinations. A case is reported in detail with successful operation.

11. Ross's article would more properly be entitled "Hydronephrosis," a term more commonly applied to the condition which he describes and which he himself applies to it in the text. The various causes are discussed and three cases are reported. Contrary to common teaching, and without discussion, he mentions complete as well as partial obstruction of the ureter as a cause. [F. W. P.]

THE JOURNAL OF MEDICAL RESEARCH.

NOVEMBER, 1910.

1. WALKER, E. L. *Trypanoplasma Rance N. Sp. and Its Life Cycle in Cultures.*
2. SMITH, T. A. *Protective Reaction of the Host in Intestinal Coccidiosis of the Rabbit.*
3. SMITH, T. *Note on the Influence of Infectious Diseases upon a Pre-existing Parasitism.*
4. SMITH, T. *Intestinal Amebiasis in the Domestic Pig.*
5. SMITH, T., AND BROWN, H. R. *Further Studies on the Immunizing Effect of Mixtures of Diphtheria Toxin and Antitoxin.*
6. *RHEIN, J. H. W. *Meningitis and Disease of the Radicular Nerves in Tabes Dorsalis.*
7. KENDALL, A. I., AND WALKER, A. W. *The Isolation of Bacillus Dysenteriæ from Stools.*
8. TYZZER, E. E. *An Extracellular Coccidium, Cryptosporidium Muris, of the Gastric Glands of the Common Mouse.*
9. STIMSON, A. M. *Local Reaction in Antirabic Inoculations.*

6. Rhein reports his observations on the pathology of the spinal meninges of 17 cases of tabes dorsalis, the cortical meninges of 16 of these, and the radicular nerves of 8 cases of tabes and 1 of syphilis of the nervous system. He believes that syphilis, either of the organs, skin, bones or central nervous system and tabes may occur as independent processes at the same time and in the same individual. His chief conclusions are: (1) The radicular nerve lesion is not constant in tabes dorsalis; (2) meningitis is not constant in all stages of tabes dorsalis; (3) lesions of the posterior columns in cases of tabes dorsalis complicated by syphilis do not differ from those found in cases in which there is no evidence of syphilitic lesion; (4) syphilitic meningitis implicating the radicular nerves in cerebrospinal syphilis may exist without causing the characteristic tabetic spinal-cord lesion; (5) the meningitis in some cases of tabes is typically specific in its appearance, but differs in degree in some and is not present in all cases; (6) the cerebral meninges were infiltrated with round cells in all the cases studied; (7) "Rand," or border degeneration, is present in a certain proportion of the cases. [G. G. S.]

THE LANCET.

NOV. 12, 1910.

1. ALLBUTT, T. C. *FitzPatrick Lectures on Greek Medicine in Rome. Lecture II.*
2. *WILLIAMS, O. T., EVANS, E. R., AND GLYNN, E. *A Case of Multiple Myeloma, with Some Observations on the Nature of the "Bence-Jones" Protein Found in the Urine. With a Pathological Report of This and Another Case.*
3. HOWARD, R. *A Radical Operation for Malignant Disease of the Testis.*
4. *MCELROY, J. *The Treatment of Pulmonary Tuberculosis by Intravenous Injections of Chinosol with Formaldehyde.*
5. WALKER, J. W. T. *Notes on Operative Treatment of Papilloma of the Bladder.*

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6. West, S. *On Chronic Bronchitis and Emphysema as the Result of Acute Pneumonia.*
7. Broadbent, W. *Aortic Regurgitation.*
8. Hirsch, C. T. W. *The Motor Exhibition at Olympia, London.*

2. Williams, Evans and Glynn report in detail a case of multiple myeloma with the so-called "Bence-Jones" protein in the urine. The autopsy report is given in full. As cases of this nature are rare, a complete and careful case report is of value.

4. McElroy reports three cases of pulmonary tuberculosis, in one of which an apparent cure and in two remarkable progress resulted from daily intravenous injections of formaldehyde and chinosol for over a month; 50 ccm. of a 1:2,000 solution of formaldehyde plus 1:4,000 solution of chinosol were injected into the median basilic vein. The strength of the solution was gradually increased up to 1:500 in the case of formaldehyde and 1:1,000 in the case of the chinosol. Chinosol is a quinine potash preparation and a powerful germicide. [J. B. H.]

British Medical Journal.

Nov. 12, 1910.

1. Allbutt, T. C. *The FitzPatrick Lectures on Greek Medicine in Rome.*
2. Sleigh, H. P. *Four Cases of Pneumonic Plague.*
3. Brown, H. H. *The Recent Plague Cases in Suffolk.*
4. *Lawson, A., and Davidson, J. M. *Radium Therapy in Eye Disease.*
5. Sloan, A. B. *Serum Anaphylaxis: A Case Illustrating Its Possible Gravity.*

THE BRITISH MEDICAL ASSOCIATION.

*Section of Bacteriology.*

6. *Houston, A. C., et al. *Discussion on Recently Acquired Knowledge Concerning the Bionomics of Pathogenic Organisms and Its Bearing on the Spread of Disease.*
7. *Macalister, G. H. K. *Dysentery Carriers.*
8. *Arkwright, J. A. *Diphtheria Carriers.*
9. Walsh, D. A., and Chapman, H. G. *On the Interpretation of the Precipitin Reaction.*
10. Penfold, W. J. *Studies in the Anerobic Culture of the Intestinal Micro-organisms.*
11. Bainbridge, F. A. *An Outbreak of Gastro-enteritis due to B. Paratyphoid (B.).*
12. Dean, H. R. *Recognition of B. Typhosus by Complement Fixation.*
13. *Ruffer, M. A., and Willmore, J. G. *The Serum Treatment of Dysentery, with Notes on the Bacteriological Diagnosis of Dysentery.*

4. The writers believe that radium is likely to prove of great service, both in the treatment of external diseases of the eye and in those of the eyelids. The method of application is simple. The eye is first cocainized and the radium contained in sealed glass tubes, allowing only beta and gamma rays to escape, was applied directly to the affected part. They have experienced absolutely no ill-effects, nor has there been any increase of inflammation or symptoms with the exception of pain which was not severe. The frequency of exposure depended entirely on the progress of the individual case. Their cases were divided as follows: Ulceration of the cornea; non-ulcerative acute inflammations of the cornea and sclerotic; affections of the lids and corneal scars. They give their results in the form of an elaborate table.

6. In the first of the papers here presented, Houston discusses soil, air, defective drains, sewer gas, and water as factors in the spread of disease, with special reference to typhoid; Lentz describes the organization and results of the typhoid campaign in southwest Germany, and Bainbridge and O'Brien discuss the distribution of certain bacilli of the food-poisoning group.

7. Macalister, speaking on the subject of dysentery carriers, concludes (1) that healthy carriers are very rare and of no importance and that (2) actual carriers are to be found among the incomplete convalescents, which form a high proportion of the cases.

8. Arkwright describes a series of cases of diphtheria carriers. He places them in three classes: (1) convalescents; (2) "contacts," those who have never had the disease, but who have been in contact with a case of diphtheria or another contact. The large majority of healthy carriers soon lose the bacilli. He mentions another class of carriers, those who have the disease in chronic form without constitutional symptoms. These are particularly dangerous in spreading disease, as they retain virulent bacilli for a long time. As regards treatment, antitoxin is of no value when given subcutaneously. Operative treatment on the tonsils, usually the seat of infection, is the best method of treatment. Gargles are of little value. He speaks of a certain number of strains of bacilli which culturally and morphologically are diphtheria organisms, but are non-virulent to man and to guinea pigs.

13. Ruffer and Willmore discuss the preparation of polyvalent antidysenteric serum and monovalent serum, the biochemical properties of these serums, the differential diagnosis of dysentery by laboratory methods and a summary of the results of the treatment of one hundred and thirty-eight cases of dysentery during the present year, with a comparison of the mortality rate of cases before and after the introduction of the serum treatment. [J. B. H.]

Deutsche Medizinische Wochenschrift. No. 46.

Nov. 17, 1910.

1. *Bardenheuer and Graessner, R. *Treatment of Fractures with Extension Bandages.*
2. Codivilla, A. *Attacks of Cramps after Orthopedic Operations.*
3. Casper, L. *The Importance of Investigation of the Functional Kidney Power.*
4. *Jochmann, G., and Möllers, B. *Treatment of Tuberculosis with Albumen-Free Tuberculin Preparations.*
5. Bittorf, A. *Cause of Heart Hypertrophy and Increased Blood Pressure with Arteriosclerosis.*
6. Hecker. *Value of the Effect of Ehrlich-Hata "606."*
7. Gerber. *Effect of Ehrlich-Hataschen "606" on Mouth Spirochete.*
8. Graul, G. *Remarks on the Nourishment Treatment of Diabetes Mellitus.*
9. Heiligtag, F. *Case of Traumatic Alexia.*
10. Wesenberg, G. *Resorption of Jothion, especially with Rectal Application.*
11. Sommer, A. *Technic of Venae Puncture.*
12. Heermann, A. *Soft Flat Foot Soles.*
13. Schall, M. *New Technical Improvements in the Field of Medicine.*

1. These authors present a long article on the question of the treatment of fracture by means of extension bandage apparatus. They describe in considerable detail, accompanied by clear drawings, their method of setting fractures of bones of all extremities and the manner in which the extension is applied. They conclude with the following rules in regard to plaster bandages: Only use them in cases for transportation, in certain complicated cases where a firm bandage is expecially indicated, and in delirious patients. They are to be used in certain cases to be treated in an ambulatory manner and after operation on simple fracture, but in both these cases they must be applied so that they can be readily removed.

4. These authors wish to report on the use of albumen-free tuberculin preparations and to correct an error which appeared in a former number (No. 38) of this journal, which resulted in the mixing up of an endotoxin preparation with Koch's albumen-free tuberculin. They consider the endotoxin recommended by Gordon in this paper as an inferior tuberculin preparation and lacking in specific effect. Koch's albumen-free tuberculin is an entirely different and more effective substance. [C. F., Jr.]

Münchener Medizinische Wochenschrift. No. 45.

Nov. 8, 1910.

1. *Nauwerck, C., and Weichert, M. *The Wassermann Reaction on the Corpse.*
2. *Spiegel. *The Syphilis Reaction by the v. Dungern Method.*
3. *Thiemich. *Value of Legal Supervision of Infants and Children for the Prevention of Epilepsy, Idiocy and Psychopathy.*

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4. HOPPE, J. *Value of Legal Supervision of Infants and Children for the Prevention of Epilepsy, Idiocy and Psychopathy.*
5. KÖHLER. *Meltzer's Intratracheal Insufflation and Kuhn's Peroral Intubation.*
6. FISCHER, C. *Phthisis and the Musculature of the Chest.*
7. SCHANZ, F. *Ehrlich's "606" in Diseases of the Eye.*
8. EITNER, E. *Disturbances of the Bladder and Other Severe Symptoms following Use of Ehrlich's "606."*
9. SACHS, H. *Pyorrhea Alveolaris and Its Successful Treatment.*
10. SEIDEL, H. *Extraction of Foreign Bodies from the Lungs.*
11. RUETE. *Hyperkeratosis from Intoxication.*
12. GRAUPNER, R. *Multiple Neuromata in Childhood.*
13. ROETHLISBERGER, P. *A Clinical Method of Quantitative Estimation of Uric Acid in Blood Serum.*
14. SCHNÉE. *High-Frequency and Thermopenetration in Four-Cell Baths.*
15. DE LEVIE, D. J. *A Plexímeter Usable as a Stethoscope.*
16. WIERZEJEWSKI, I. *An Adjustable Support for the Pelvis.*
17. KELLING, G. *Cystoscopy for the Examination of Serous Cavities.*

1. The writers report with tables a large number of Wassermann tests. They reach the conclusion that the Wassermann reaction on the corpse behaves as it does in the living, and that it is of some diagnostic value, but that when the pathological examination of lesions leaves doubt as to their origin, a positive Wassermann test does not justify the inference that such lesions are syphilitic.

2. Spiegel tried the v. Dungern modification of the Wassermann reaction on a large number of cases, syphilitic and non-syphilitic, and believes that it is of practical value for the diagnosis of syphilis. His results compare favorably with those usually obtained with the ordinary Wassermann test.

3. Believing that digestive disturbances are important etiologically for imbecility and neuropathic states, the writer draws the conclusion that supervision and care of infants during the first year of life is an important prophylactic measure. He does not think that epilepsy can be prevented in this way. [G. C. S.]

ANNALES DE L'INSTITUT PASTEUR.

OCT. 25, 1910.

1. *Madame Pasteur.*
2. *METCHNIKOFF, ELIE. *Studies upon Intestinal Flora, Intestinal Poisons and Sclerosis.*
3. CALMETTE, A. *Tubercular Hereditary Predisposition and Tubercular Earth.*
4. BORREL, A. *Parasites and Tumors. Report Presented at the Second International Conference for the Study of Cancer.*
5. WOLFF, J. *Relations between Natural and Artificial Oxydizing Phenomena.*
6. REMLINGER, P. *Contribution to the Study of the Latency of Rabic Virus in the Central Nervous System.*
7. *WOLLMAN, E. *Action of the Small Intestine on Bacteria.*
8. BRETON, M. *Experimental Researches on Vesical Tuberculosis.*
9. YAKIMOFF, W. L., AND YAKIMOFF, N. K. *Contribution to the Chemical Treatment of Tick Fever with "606" and the Dye of Benzidine.*

2. Metchnikoff elaborates upon his former work, which claims that there is some relation between the alimentary poisons produced by bacteria and arteriosclerosis. The principal poisons are indol and phenol, and these are produced by the action of the bacteria which normally frequent the alimentary tract. This article reviews the results of experimental work with salts of indol and phenol on guinea pigs and rabbits. The guinea pigs did not show any lesions, but the rabbits did. He also cites human cases which in one way or another have been poisoned with carbolic acid and which show considerable signs of arterial degeneration. He takes up the question of diet and animals that live exclusively on one kind of food, and shows that animals representing each variety have sclerosis.

7. Wollman describes a rather clever device for testing loops of the intestine in regard to their bactericidal power. The small intestine juice and cells have, in his opinion, no bactericidal power in themselves. The absence of bacteria high up in the small intestine is due to the acidity of the gastric juice. [C. F., JR.]

## Obituaries.

### FREDERICK WILCOX CHAPIN, M.D.

DR. FREDERICK WILCOX CHAPIN, who died of angina pectoris at Springfield, Mass., on Dec. 15, 1910, was born on Nov. 7, 1849, in Middletown, Conn. He fitted for college at Phillips Academy, Exeter, N. H., and graduated from Harvard in 1870 with the degree of A.B. He studied medicine in New York at the College of Physicians and Surgeons, from which he received the degree of M.D. in 1873. After serving for two years as house physician at the Bellevue Hospital, in New York City, he settled in Springfield, where he continued the practice of medicine till the day of his death. He is survived by two daughters, by one son, also a physician, and by an infant grandson.

For more than thirty years Dr. Chapin was a member of the staff of the Springfield Hospital. He was an able surgeon as well as a skilled internist, but after a serious attack of pericarditis in 1898 felt himself obliged, to his keen regret, to relinquish surgery. He remained, however, a consulting physician to the hospital and became vice-president of its board of trustees. He was also a trustee of the Northampton Insane Hospital and a member of the Springfield Association for the Prevention of Tuberculosis, of the Springfield Academy of Medicine, and of the Springfield Medical Club. He was a fellow of The Massachusetts Medical Society, of which he was for many years councillor, and a member of the Hampden District Medical Society. He early became a medical examiner of the Massachusetts Mutual Life Insurance Company and in 1902 was appointed its medical director. Since 1898 he had also been a member of the board of United States examining surgeons for pensions.

Dr. Chapin was at all times an alert and progressive student of medicine and was prompt to adopt and make use of the many scientific discoveries and advances in method which revolutionized medical practise during his professional life. He won particular reputation for his early introduction into his community of tetanus antitoxin not only in the treatment of tetanus, but in its prophylaxis after blank-cartridge wounds. His rare professional ability, his integrity and his singular charm and beauty of character made him, for years, the most honored, trusted and beloved physician throughout the wide locality in which he was known. Though he was quiet and reserved in manner, his personality in the sick-room or the office brought comfort and confidence to all with whom he came in contact. To those whose privilege it was to enjoy his more intimate personal acquaintance he revealed himself as a man of delicate humor, of exquisite taste, sympathy and insight, and of loyal affection.

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His friends hardly knew whether to admire and respect him more for the beauty of his domestic life or for the devotion and heroism that he gave to the practise of his profession, even under physical disability and personal sorrow and suffering. The manner of his death was what he or any true physician would wish for himself, for he discharged his daily duties to the end, and visited patients the evening before he died. His life exemplified the highest ideals of our profession, for it was one of unselfish and unremitting service. His memory will be cherished by all who knew him as an assurance of the enduring nobility of Christian virtue and a pattern of what is best and greatest in the character of the good physician.

### JOHN C. DA COSTA, M.D.

Dr. John C. Da Costa,[1] who died of pneumonia in Philadelphia on Dec. 6, was born in 1834. He at first became a civil engineer and worked in that capacity nearly twenty years for the St. Paul & Duluth Railroad. Later in life he began the study of medicine and graduated from the Jefferson Medical College in 1878. He became instructor and afterwards demonstrator of obstetrics in that institution, and subsequently for over twenty years served as visiting gynecologist to the Jefferson Medical College Hospital. He was visiting physician to the Lying-in Charity Hospital and visiting gynecologist to St. Agnes Hospital. He was a member of the American Medical Association, president of the Philadelphia Obstetrical Society, and a fellow of the College of Physicians of Philadelphia.

## Miscellany.

### MIDWINTER MEETING OF THE ÆSCULAPIAN CLUB.

The ninth annual midwinter meeting of the Æsculapian Club of Boston was held at Hotel Brunswick on Thursday evening, Dec. 15.

In addition to the members of the club, about forty invited guests, physicians of Boston, were present.

The speakers of the evening were introduced by the president, Dr. Robert M. Green.

Dr. John G. Blake, senior physician to the Boston City Hospital and a newly elected honorary member of the Æsculapian Club, spoke on "Medical Teaching Fifty Years Ago." He recalled many interesting and amusing features of the methods of teaching which prevailed at that time. Especially appreciated by the younger members present was his pleasant and vivid characterization of the personality of many distinguished teachers of an older generation with whom students of to-day have not had the opportunity and privilege of coming into contact.

The subject of the second speaker, Dr. George B. Shattuck, president of The Massachusetts Medical Society and also a newly elected honorary member of the Æsculapian Club, was "The Fugacious Years."

Reverting to the address made before the club two years ago by President Eliot, Dr. Shattuck commented on the unparalleled advances made in recent years by scientific medicine — progress which gives justification to the hope that the medical profession might, in time, attain its ideal goal, making itself unnecessary. He suggested, however, that though medical progress has been rapid, human progress, in the readiness of mankind at large to accept and follow completely the paths pointed out by science, has been distinctly slower and less satisfactory. The establishment of perfect correlation between human and scientific progress seems, therefore, likely to require years of patient and persistent effort. And in the lapse of future time there will be as great need as in the past for the daily human ministrations of the good physician.

The third speaker of the evening was the Rev. Samuel M. Crothers, of Cambridge, who took for his topic, "Literature and Medicine."

He remarked that the idea that when preventive medicine should be perfected the physician would become extinct reminded him of the similar problem which confronts the clergyman, that when all sinners are converted the church would no longer be needed.

Another point of similarity between the positions of the physician and the clergyman is the unique opportunity of each for discriminating reflection upon human life and human character. On the part of the physician, this discrimination, this diagnostic attitude, is the essence of his professional habit of mind and, therefore, fits him particularly for that criticism of life which finds its expression in literature. The best in literature is a by-product of other activities. That the press of these activities often prevents the doctor from making the most of the opportunities that might lead him into literature does not discredit the value of these opportunities.

Distinguished examples, like those of Sir Thomas Browne, of Rabelais, both a physician and a priest, and of Oliver Wendell Holmes, show that literary and medical pursuits are not incompatible, but mutually stimulating.

Whatever his aim in either field, the truest genius of the physician will manifest itself through that peculiar discriminating temper of mind which makes him, in creed, not a gnostic or an agnostic, but a diagnostic.

### THE PREVENTION OF PLAGUE IN INDIA.

The report of the Punjab Plague Committee for the year 1910 contains twenty-six definite recommendations and conclusions. Some of the more important of these are as follows: (1) An active antiplague policy on the part of the government is necessary and should be continued. (2) The destruction of rats by means of poisoning and

[1] We regret exceedingly that, owing to an unfortunate misunderstanding, there appeared in last week's issue of the Journal an obituary notice under the name of Dr. John Chalmers Da Costa, who is, happily, still living. We apologize to him sincerely for this error, by which his name was confused with that of another member of the same distinguished medical family.

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trapping on the present lines does not yield results commensurate with the expenditure incurred and should be discontinued; the greatest prospect of success in preventing the spread of plague by means of rat destruction consists in attacking the comparatively few localities where plague persists during the quiescent period. (3) Antiplague inoculation is essentially a personal prophylactic measure, and in recommending its adoption everything savoring of compulsion or pressure should be carefully avoided. (4) For dealing with plague epidemics in villages, evacuation is a most important antiplague measure. (5) The disinfection of infected houses during the course of an epidemic, or after its cessation, is not ordinarily necessary, but disinfection, as applied to the clothing and baggage of persons coming from infected areas, is a valuable means of preventing the spread of plague into uninfected areas and should be carried out wherever possible. (6) The only measures of a compulsory nature which are permissible are those demanded by public opinion and capable of being put into operation by the people themselves. Other recommendations deal with measures facilitating quarantine and isolation, and the extension of legal powers to the inhabitants of towns, as well as villages, to prevent the access of persons coming from infected areas, is advocated.—*British Medical Journal.*

## Correspondence.

### LETTER FROM PARIS.

A STRANGE SOURCE OF INFECTION. CONCERNING THE SURGEON ROUX. AN ABORTIVE TREATMENT OF SYPHILIS.

[*From Our Special Correspondent.*]

PARIS, Nov. 30, 1910.

*Mr. Editor:* The number of processes whereby the human body can get into serious trouble, or even be destroyed altogether, is so great that a feeling of astonishment frequently arises in the mind that any of us should be able to survive at all! There are certainly stranger methods than the one I recently heard of; but still, this one is so curious, and I imagine so little known, that the incident seems quite worth relating.

A few weeks ago a lady while walking in the forest of Saint-Germain, near Paris, scratched her hand in trying to get through some underwood. Nothing is commoner in the country than an accident of this nature, and as a usual thing of course these little wounds heal up without treatment or dressings. In this instance, however, the sequelæ of the accident were most alarming, to such an extent that the patient's life was for a while considered to be in danger; lymphangitis of the arm set in, with chills and pyrexia, the axilla became involved and had to be opened, and only after four weeks of incessant care and treatment was the patient's condition such that her medical advisers considered that they could report her to be on the way to recovery.

Now it appears that in the country cases similar to this are by no means pathological phenomena; such accidents occur every now and then among the peasantry, with sufficient frequency for the notion of the danger arising from wounds inflicted by *black* thorns to be a matter of current knowledge among them.

The curious side of the story lies in the genesis of these accidents, and nothing but a little knowledge of natural history can explain them, for the two reasons that immediately occur to the average mind,—that the wound became infected *subsequently*, or that the disorder may be of a nature similar to poison-ivy,—are neither of them founded on fact.

One of the common shrubs in this part of the world is the *berberis vulgaris*, or, as we would call it, the barberry, a plant that is provided with long and strong thorns. There is also a well-known bird of the lanius species in our woods known as the shrike in English. Now this bird, though scarcely larger than a thrush, is in reality a bird of prey, carnivorous, living off of insects, small birds and small quadripeds; it also has a habit of killing more than it wants or can eat for the time being, and in order that this excess of provender may not be wasted, but be available for emergencies, it creates for itself a larder by impaling its victims on the thorns of the *berberis*, where they hang somewhat like the carcasses of animals in a butcher's shop, and for this reason the shrike has also been called the butcher-bird.

The filiation of the accidents referred to above then becomes evident at a glance. The decomposing animal matter turns these particular thorns black, whence the peasant's dread of wounds inflicted by thorns of that color; and the nature and gravity of the lymphangitis occurring after such wounds is only too explicable, they being very similar, of course, to accidents occurring in the dissecting room. But at the same time these incidents would seem very mysterious without the help of a little natural history!

A man just returned from Lausanne brings some interesting details concerning Roux, the well-known surgeon of that locality, one of the very foremost if not *the* foremost surgeon of Europe. When I had listened to his account of the life that Roux leads, I felt that I must absolutely write to you about it, on the chance that it might come to the ears of our friend T. R., and possibly cheer him up in his present adversity, for this is a tale of a strenuous life if ever there was one; so far as I know there is only one other surgical center where anything similar goes on,—Rochester, Minn.,—but there there are several operators, whereas Roux is alone.

Let us take first as a term of comparison the life of a professor of clinical surgery at the Faculty here, for Roux is professor of clinical surgery at Lausanne: About twice a week this professor turns up at an hour between 9 and 10 A.M., makes a rapid visit in the wards, adjourns to the theater, lectures on a case, operates on it, and disappears; on the other days of the week he may visit his wards, just as he may leave that to his *chef-de-clinique*. The official course of surgery will probably not begin until well into November; every chance is taken to get days off by profiting by the manifold holidays which the people has inherited from its Catholic days; and the course will end in June, after a duration of certainly not more than six months if honestly estimated. In a word, if the truth is said in this matter, the conduct of such a clinic approaches perilously near to organized shirking. Now let us see what Roux does.

Roux is a man between fifty and fifty-five, consequently by no means the young professor just appointed and anxious to show his zeal. He has the surgical service at the large cantonal hospital, and then his private clinic, where he can take upwards of sixty patients. At the hospital he holds a clinic for the students *every* morning of the week except Sunday from 8 to 9.30. He then operates, and this was the program on the morning my friend was there: Inguinal hernia; hysterectomy for myoma; two cases of appendicitis; tubercular synovitis of back of hand; excision knee-joint (tubercular); chronic osteomyelitis femur with removal of sequestra; amputation leg; resection two ribs, pleural fistula, gangrene lungs; two straightenings of flat foot under chloroform; cystostomy; dilatation esophagus,—thirteen interventions, ending at 1 P.M. On this particular day Roux was back at the clinic at 4.30, and stayed there until 9 in the evening.

The program of another day was as follows: Clinic to students, 8 to 9.30; seven operations at the hospital; twelve operations at his clinic; consultation at Neuchatel (a good hour away by train); two consultations at Lausanne.

Another day he was anxious to clear up what work there

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was at the cantonal hospital in order to get away for a rest; so he began at 6.30 A.M. and operated on *twenty-five* patients!

Roux has two office consultations per week to which admission is only obtainable by application beforehand, and sees thirty patients at each of them, the cases being furnished with numbered tickets. He is now well on in his *fourth* thousand of interval operations for appendicitis.

Not the least remarkable side of this question is that Roux has come through all this success absolutely unspoiled, and that in particular his fees are so modest as to have become proverbial all over Europe.

Returning now once more to the "606" question, — the reports are certainly confusing, and it is difficult to know what to believe; even in Germany adverse criticism is not lacking, and quite recently a learned professor came out with a statement advising physicians not to use it outside of hospital work. All authorities seem agreed as to its marvelous efficacy in certain cases, but where they differ is in regard to its sequelæ, some saying that when properly used it is harmless, and others quite the opposite. The latest contribution to the question in France is the report just presented to the Academy of Medicine by Professor Gaucher, the successor of Fournier, in which "606" is handled rather roughly. In fact, although there seems to be no reason for anticipating that Ehrlich is in for such a disaster as happened to Koch with his tuberculin, there appears to be every prospect of our having to give up most of the hopes which the early reports concerning "606" had led us to conceive. We are already very far from the remedy that was going to sterilize the organism with a single injection.

However, at the same séance in which Gaucher's paper was read Hallopeau came forward with further details about what he calls his abortive treatment of syphilis; and since the cases dealt with in this manner have now reached a certain figure, and at the same time a respectable period has elapsed since they were so treated, it may be well to say a few words in regard to this method, as Hallopeau is a man of position here, elderly now, and was for many years one of the specialists attached to St. Louis Hospital for venereal and skin disorders. He has during the past year brought the matter before various learned societies, and in particular before the Academy of Medicine on four different occasions. It is, therefore, not possible to ignore what he says, and he states in so many words that he is now in a position to claim that syphilis can be aborted, and in a comparatively simple manner.

The point of departure of Hallopeau's method is that the disease remains almost entirely localized during its primary stage, and that it is possible to destroy the treponema in its initial localizations; he consequently attacks the disease *in situ* and administers parasiticidal injections every day for a month either beneath the skin of the penis or about the vulva, to speak only of the commonest seats of the disease, the needle being inserted either into the chancre itself, into the surrounding tissues or along the course of the lymphatics leading to the satellite lymph-nodes. Together with these injections he administers a general intensive treatment consisting in injections of 2 cgm. of hydrarg. benzoate, and from 1 to 2 gm. of KI. are given as well by the mouth.

The local specific used at first was atoxyl, helped out at times by arsacetine as a dressing for the chancre; but this was soon abandoned in favor of hectine, a synthetic product prepared by Mouneyrat and rejoicing in the chemical denomination of benzo-sulfono-paramino-phenyl-arsenate of soda. This was the only product that was tolerated by the delicate cellular tissue beneath the skin of the penis. The injections were at first painful, but this has now been remedied by neutralizing this substance. Hectine is in reality atoxyl modified by the introduction of a radical sulfone. Arsacetine is likewise a derivative of atoxyl. Yet these products seem to have no deleterious effect on the patient's sight. It is true that the doses so far used have been moderate, 0.10 to 0.20, and that if this amount had not been freely exceeded with atoxyl we should probably not have heard of its action on sight. There is a farther preparation, hectargyrum, a combination of hectine 0.10 and of hydrarg. oxycyanide 0.002, that seems very promising and that Hallopeau proposes to experiment with at the earliest occasion.

His present technic is, then, to administer an injection of 0.20 of hectine each day for thirty consecutive days beneath the skin of the penis, dissolved in 2 gm. of sterilized water; he claims — and, in fact, when the question is considered the claim seems rational — that in this way the amount of active remedy that is likely to come into direct contact with the spirochetæ in or proceeding from the chancre is infinitely greater than when such a remedy is given in the hip, and *a fortiori* when given by the mouth. He thinks that it must be several thousand times greater, and that consequently the therapeutic result must be proportionately more favorable. Now since, according to his view, the disease in its first stage is confined almost entirely to the chancre, with the lymphatics leading to the nearest lymph-node barrier, the introduction of the active remedy directly into this tract seems as rational as that of the local treatment of a surgical wound with lymphangitis and lymph-nodes. Any spirochetæ that may have escaped the barrier and have got into the general circulation are dealt with by the general treatment mentioned above.

But now for results, for that is the test of the method. Hallopeau personally has treated by this method seventeen cases, his oldest case dating two years back and his most recent one seventy-five days, without a single instance of failure! The method has also been used once or twice preventively, but such negative cases of course prove nothing. With the seventeen cases several were substantiated by the ultramicroscope and by the Wassermann test. Now such a series as this in the hands of a man with Hallopeau's experience is one that commands attention. In one instance in which the abortive treatment was applied by another physician the patient was so much encouraged by the result that he managed to contract a second indurated chancre four months later, which looks as though either the treatment had been successful or else the diagnosis erroneous.

Hallopeau's experience, however, is as nothing compared with that of a specialist in Rio de Janeiro, who, having read Hallopeau's first publication on the subject, August, 1909, managed to treat 127 cases of indurated chancre therewith in the space of about six months, Rio being a town of 400,000. This practitioner claims that up to the date of his report not a single one of this enormous series of hard chancres had shown any sign of secondaries! If this should turn out to be true, and there is no reason at present for doubting the report, then there can be no question but that we are here in possession of (at the very least) an important modification of our ordinary treatment of the primary stage, and that, instead of our usual hip or back injections of biniodide we will be well advised to use the silver salts in small doses in injections *in situ*.

"*S.*"

## REPORT OF THE MASSACHUSETTS TUBERCULOSIS COMMISSION.

BOSTON, MASS., Dec. 13, 1910.

*Mr. Editor:* In the editorial upon the "Report of the Massachusetts Tuberculosis Commission" in your issue of Dec. 8, 1910, commenting on the recommendations of the commission "that the state pay a subsidy of five dollars per week for each non-paying patient in a local hospital which meets with the approval of the trustees of hospitals for consumptives provided tubercle bacilli are demonstrated," and that cities and towns with over ten thousand inhabitants be required to establish dispensaries for tuberculosis by agency of the local boards of health, you say: "Before they [these recommendations] become the basis of action, however, they should be subjected to rigid criticism, for in undertaking subsidy, the state is employing a dangerous agent. The taxpayer is already overburdened, and once the principle of subsidization becomes established and familiar, it is difficult to foresee to what extent it might be carried by those whose charitable enthusiasm is greater than their judgment or their own financial assets."

It may help your readers to conduct their "rigid criticism" to a sound conclusion and to understand the

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*economic* advantages of the plan proposed if they study the plan of subsidy as it has already been applied in Denmark and Sweden.

Denmark is a poor country as compared with this and they have adopted this plan as an economic measure, as the cheapest way they can devise for bringing about an effective control of tuberculosis and stopping the enormous loss of lives and money which this disease occasions. The plan has the advantage of an equitable division of the burden of expense between the state and the various localities. It is a system under which the provision of beds is not likely to outrun the demand, each locality best knowing its own needs.

Your writer shrinks from the moderate cost of such a subsidy to the state and makes no allusion to the enormous loss to the state which tuberculosis causes. I would urge upon your readers a study of the careful article presented at the sixth International Congress by Prof. Irving Fisher, of Yale University, upon the cost of tuberculosis and its reduction. This is not the place to discuss this article at length, which should be read in its entirety to give an idea of the careful and fair way in which the figures are computed. Professor Fisher reaches the opinion that $8,000 is the minimum monetary cost of each death from tuberculosis, and subtracting from this $8,000 all that part of the loss which the consumptive himself may be regarded as having suffered, it leaves $3,200 as representing the economic loss to the community by the death of each consumptive. The deaths from pulmonary tuberculosis in the year 1909 were over 4,000 in the state. Accepting 4,000 as a round figure considerably below the truth, the economic loss was $13,000,000. The number of deaths from all forms of tuberculosis in that year were 5,998, showing an economic loss of $19,193,600.

This annual loss should be borne in mind when considering the payment of a subsidy of something over $300,000.

I would refer your readers to the report of the commission for a full consideration of the reasons which led them to think that segregation of advanced cases would reduce the death-rate and so would reduce this enormous money loss that the state is suffering each year.

In 1880, the death-rate in Massachusetts from tuberculosis was double what it is now. This means that the state is now saving $13,000,000 each year as a result of the improved conditions of living brought about by a better understanding of the laws of health, greatly aided by the work of the sanatoria and other health agencies.

Surely such a saving justifies the expenses of our health departments and sanatoria, without taking into account the relief of suffering and misery which has been an incidental advantage.

In conclusion, your writer says "that human progress is necessarily slow, that something must be left to natural processes, which can be aided, but not hastened."

This is an astonishing view to hold in reference to progress in medicine. He must indeed be an impatient person if the rate at which medical discovery and practice have proceeded in the past thirty years seems to him slow.

The fact appears to be that progress has been so rapid that the practical application of our knowledge is lagging somewhat. The suggestions contained in the report of the Commission on Tuberculosis point the ways by which an intelligent community may reap the benefits of the great advance in scientific medicine.

Respectfully yours,
ARTHUR T. CABOT, M.D.

## APPOINTMENTS.

THE following appointments have been made at the Harvard Medical School: Dr. John Bapst Blake, Assistant Professor of Surgery. Dr. Robert Battey Greenough, Assistant Professor of Surgery. Dr. Edward R. Nichols, Assistant Professor of Surgical Pathology and of Surgery. Dr. Paul Thorndike, Assistant Professor of Genito-Urinary Surgery. Dr. Hugh Cabot, Instructor in Genito-Urinary Surgery.

## SOCIETY NOTICES.

THE NORFOLK DISTRICT MEDICAL SOCIETY.—A regular meeting of the Society will be held at Masonic Temple, 171 Warren St., Roxbury, Tuesday, Dec. 27, at 8 o'clock. Business. Communications: "Some Common Diseases of the Lower Rectum and Anus." F. W. Sleeper, M.D.; "Rectal Fistulæ," T. Chittenden Hill, M.D. Discussion by E. W. Cushing, M.D., F. Percival Williams, M.D., Joseph C. Stedman, M.D. Refreshments after the meeting.

BRADFORD KENT, M.D., *Secretary*,
798 Blue Hill Ave., Dorchester.

BOSTON MEDICAL LIBRARY IN CONJUNCTION WITH THE SUFFOLK DISTRICT MEDICAL SOCIETY.—Medical Section Meeting, John Ware Hall, Wednesday, Jan. 4, 1911, at 8.15 P.M. 1. "Infectious Diarrhea, Its Clinical Treatment from the Bacterial Standpoint," Henry I. Bowditch, M.D.; 2. "Infectious Diarrhea, Its Bacteriology and Bio-Chemistry," Arthur I. Kendall, Ph.D.; 3. "Analysis of 175 Cases of Infectious Diarrhea in Infancy," Jas. Herbert Young, M.D.—all from the wards of the Boston Floating Hospital. Discussion by Drs. T. M. Rotch, J. L. Morse and F. B. Talbot.

EDWIN A. LOCKE, M.D., 311 Beacon St.
HENRY JACKSON, M.D., *Chairman*, 380 Marlborough St.

## RECENT DEATHS.

HARPER, ALFRED ALPHONSO, M.D., M.M.S.S., died in North Adams, Nov. 14, 1910, aged thirty-four years.

CHAPIN, FREDERICK WILSON, M.D., M.M.S.S., died in Springfield, Dec. 17, 1910, aged sixty-one years.

DR. ROBERT HALL, who died of apoplexy last week at Providence, R. I., was born in 1829. He graduated from the College of Physicians and Surgeons, New York, in 1856, and subsequently studied medicine in Vienna. He was a homeopathic practitioner, but made a specialty of gynecology.

DR. CARL H. KROEBER, a well-known physician of Yonkers, N. Y., died on Dec. 12, at the age of forty-one years. He was a native of Germany, and was graduated from the College of Physicians and Surgeons, New York, in 1896. He had served as vice-president of the J. Foster Jenkins Medical Society of Westchester County, and at the time of his death was visiting physician to St. Joseph's Hospital, Yonkers.

## BOOKS AND PAMPHLETS RECEIVED.

Proceedings of the Pathological Society of Philadelphia.

The Purins. By Henry Reed Hopkins, M.D., Buffalo, N. Y. Reprint.

Medico-Pharmaceutical Ethics. By A. S. Musante, Ph.G., M.D. San Francisco, Cal. Reprint.

## RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, DEC. 10, 1910.

| CITIES. | Reported deaths in each. | Deaths under five years. | CITIES. | Reported deaths in each. | Deaths under five years. |
|---|---|---|---|---|---|
| New York | 1,343 | 335 | Pittsfield | 16 | 3 |
| Chicago | 604 | 159 | Brookline | 8 | — |
| Philadelphia | — | — | Gloucester | 6 | — |
| St. Louis | — | — | North Adams | 5 | 2 |
| Baltimore | — | — | Northampton | 12 | 2 |
| Cleveland | — | — | Chicopee | 3 | 2 |
| Buffalo | — | — | Medford | 4 | — |
| Pittsburg | — | — | Beverly | 6 | 1 |
| Cincinnati | — | — | Leominster | 3 | 1 |
| Milwaukee | — | — | Hyde Park | 2 | — |
| Washington | — | — | Melrose | — | — |
| Providence | — | — | Newburyport | 6 | 1 |
| Boston | 226 | 50 | Revere | 3 | 3 |
| Worcester | 51 | 13 | Westfield | 5 | 1 |
| Fall River | 25 | 6 | Woburn | 3 | 1 |
| Cambridge | 27 | 5 | Peabody | 1 | — |
| Lowell | — | — | Marlboro | — | — |
| New Bedford | 33 | 13 | Attleboro | 3 | 1 |
| Lynn | 28 | 4 | Adams | 3 | 1 |
| Springfield | 37 | 4 | Clinton | 5 | — |
| Lawrence | 31 | 15 | Gardner | 5 | 2 |
| Somerville | 12 | 1 | Milford | — | — |
| Brockton | 18 | 5 | Watertown | 1 | 0 |
| Holyoke | 21 | 7 | Plymouth | — | — |
| Malden | 14 | 2 | Southbridge | 1 | 1 |
| Chelsea | 12 | 1 | Weymouth | — | — |
| Newton | — | — | Framingham | 3 | 1 |
| Salem | 13 | 5 | Wakefield | — | — |
| Haverhill | 9 | 1 | Webster | 2 | 1 |
| Fitchburg | — | — | Arlington | 4 | 1 |
| Everett | 4 | 1 | Greenfield | 1 | — |
| Quincy | — | — | Methuen | 1 | — |
| Taunton | 10 | 3 | Winthrop | — | — |
| Waltham | 8 | 2 | | | |

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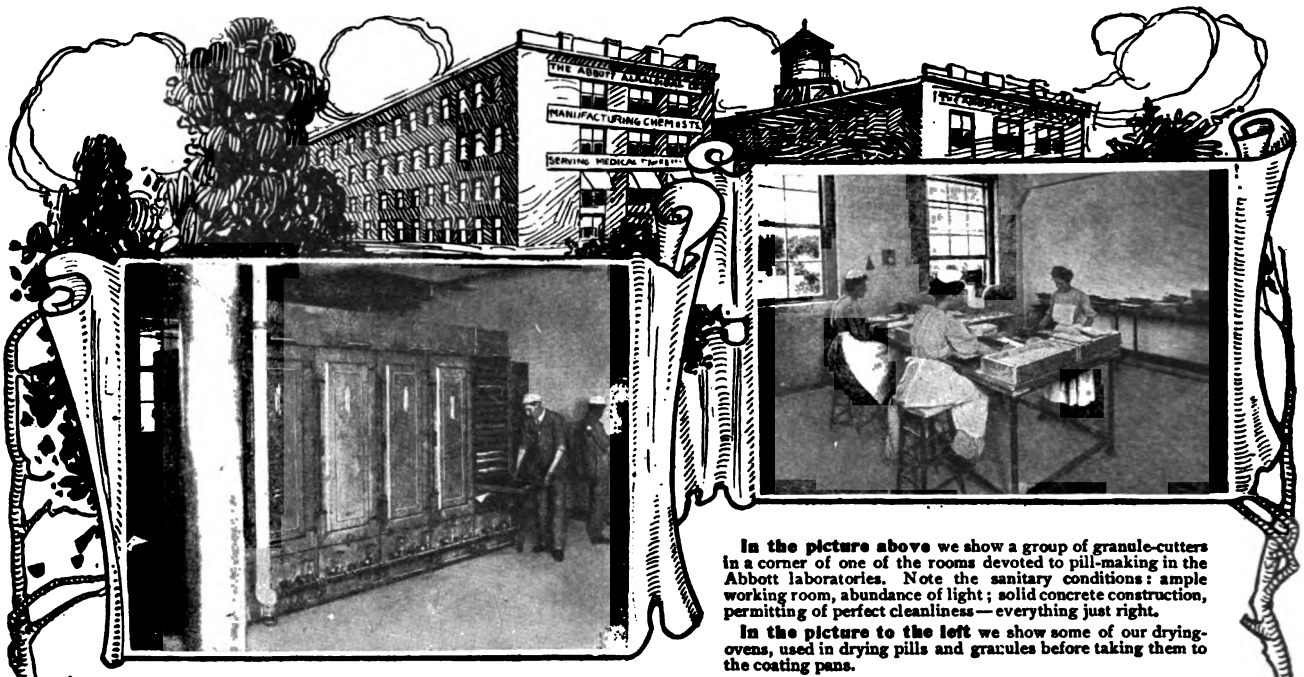


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# *A Few Reviews of*

# Goldthwait, Painter & Osgood's Diseases of the Bones and Joints

have been published. They are unanimous in their statement that the book is of exceptional value, that it is original, and that the purpose of the authors plainly set forth has been well accomplished.

---

Although the authors in their preface disclaim any intention of writing a book on orthopedic surgery, this book is written with a remarkable breadth of view, and in a most scientific manner, and sums up well the modern knowledge on this branch of medicine. There is a marked absence of " canned material " from the book, which is most refreshing, the pathology is up to date and unusually good, and the differential diagnosis of the various diseases, except that of Pott's disease, is excellent. The chapter on osteomyelitis is far better than that on the same subject in most surgical textbooks, and those on tuberculosis of the smaller joints, the treatment of hip disease, and the technic of operations on tuberculous joints are all very well done, also that on pelvic articulations. The illustrations are numerous and clear, and made clearer by the notes that accompany them. It is evident throughout the book that the authors have studied their joints, and whenever it is possible they prove their case. The inclusion of a large number of histories is somewhat of a new departure. — *The Medical Record.*

---

The authors have entitled the book " Clinical Studies," perhaps to disabuse the minds of those who might expect a " textbook " along the old lines, and they offer these studies primarily " to those practitioners of medicine to whom sufferers from joint disease usually make their first appeal." This does not mean that the book is elementary in its scope. It represents, on the contrary, a large part of the experiences, deductions and also results of original investigations of three busy men handling annually a large amount of clinical material. But as the style of presentation is up to what we expect from Boston, this is a work which can be read from cover to cover by any medical man. * * *

As a whole, the volume stands as a contribution of science to humanity. Its pages not only show a spirit of aiding the cripple, but also breathe patriotic and humanitarian desires to help the nation and the race. It will awaken an interest in bone and joint diseases that, so far, has been dormant in many. It is another solar-plexus blow to the diagnosis " rheumatism." It should be read by every one who has treated, does now treat, or ever expects to treat, a case of bone and joint disease or disability. — *The Journal of the Minnesota State Medical Association.*

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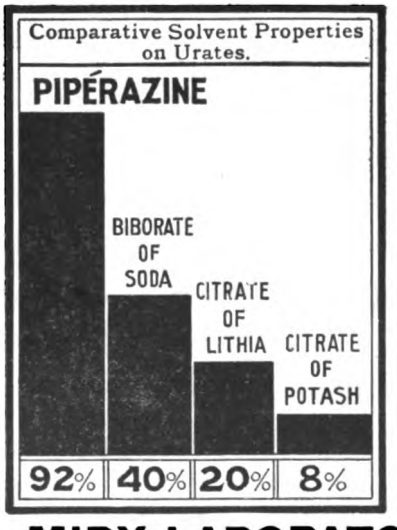


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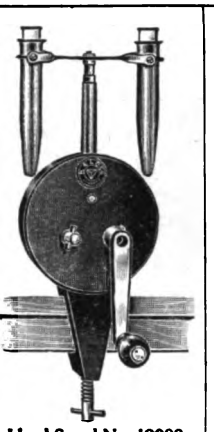

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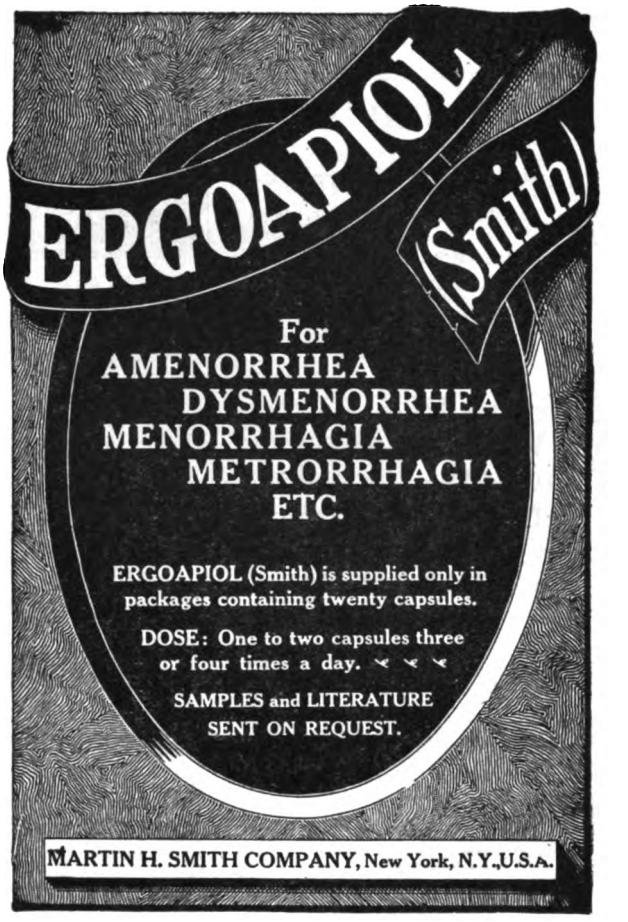


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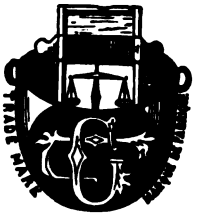

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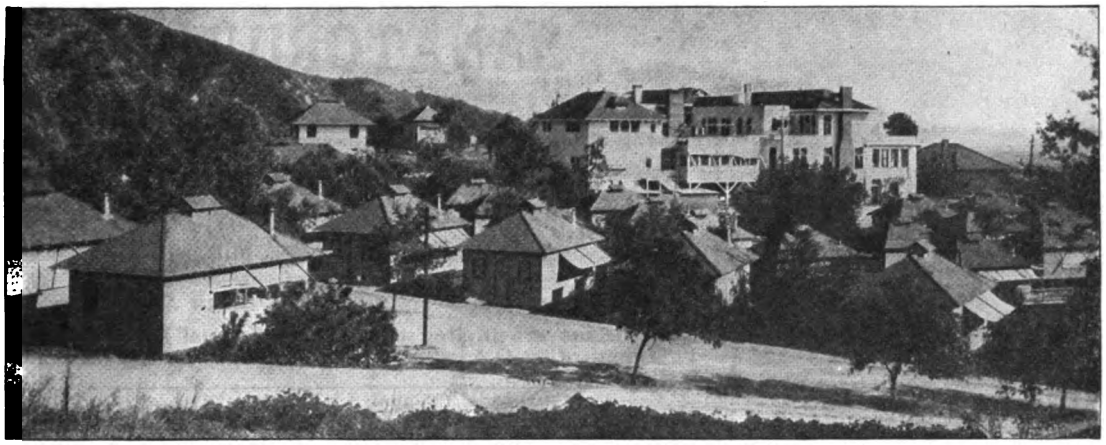

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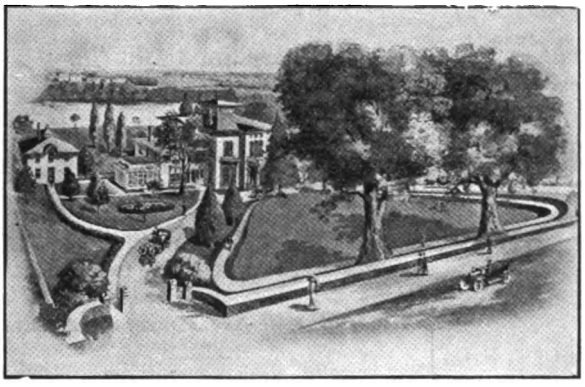

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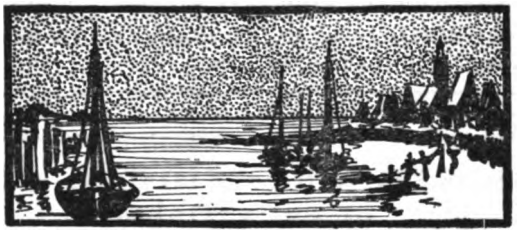

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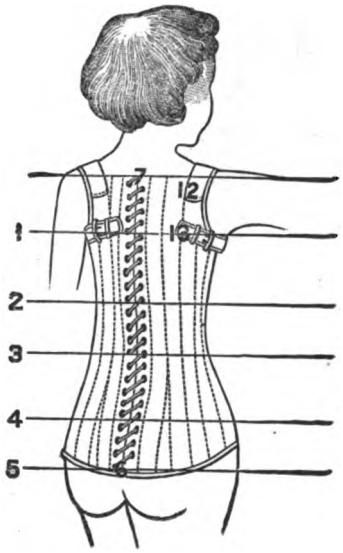


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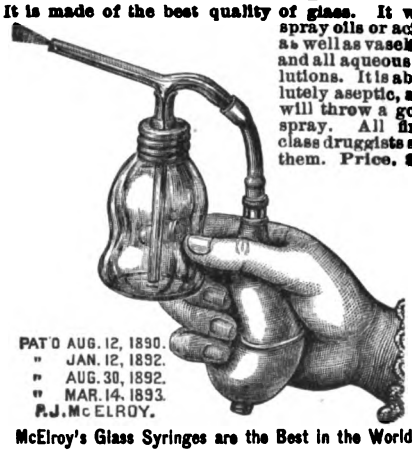


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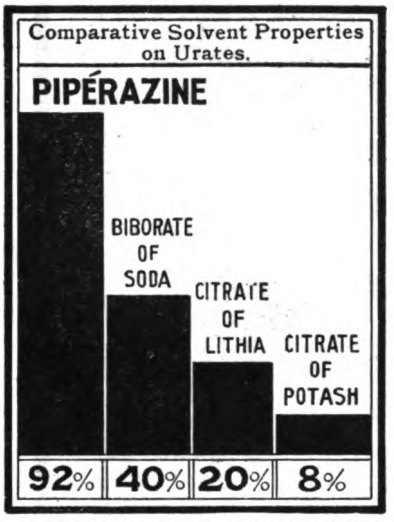


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have been published. They are unanimous in their statement that the book is of exceptional value, that it is original, and that the purpose of the authors plainly set forth has been well accomplished.

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Although the authors in their preface disclaim any intention of writing a book on orthopedic surgery, this book is written with a remarkable breadth of view, and in a most scientific manner, and sums up well the modern knowledge on this branch of medicine. There is a marked absence of " canned material " from the book, which is most refreshing, the pathology is up to date and unusually good, and the differential diagnosis of the various diseases, except that of Pott's disease, is excellent. The chapter on osteomyelitis is far better than that on the same subject in most surgical textbooks, and those on tuberculosis of the smaller joints, the treatment of hip disease, and the technic of operations on tuberculous joints are all very well done, also that on pelvic articulations. The illustrations are numerous and clear, and made clearer by the notes that accompany them. It is evident throughout the book that the authors have studied their joints, and whenever it is possible they prove their case. The inclusion of a large number of histories is somewhat of a new departure. — *The Medical Record.*

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The authors have entitled the book " Clinical Studies," perhaps to disabuse the minds of those who might expect a " textbook " along the old lines, and they offer these studies primarily " to those practitioners of medicine to whom sufferers from joint disease usually make their first appeal." This does not mean that the book is elementary in its scope. It represents, on the contrary, a large part of the experiences, deductions and also results of original investigations of three busy men handling annually a large amount of clinical material. But as the style of presentation is up to what we expect from Boston, this is a work which can be read from cover to cover by any medical man. * * *

As a whole, the volume stands as a contribution of science to humanity. Its pages not only show a spirit of aiding the cripple, but also breathe patriotic and humanitarian desires to help the nation and the race. It will awaken an interest in bone and joint diseases that, so far, has been dormant in many. It is another solar-plexus blow to the diagnosis " rheumatism." It should be read by every one who has treated, does now treat, or ever expects to treat, a case of bone and joint disease or disability. — *The Journal of the Minnesota State Medical Association.*

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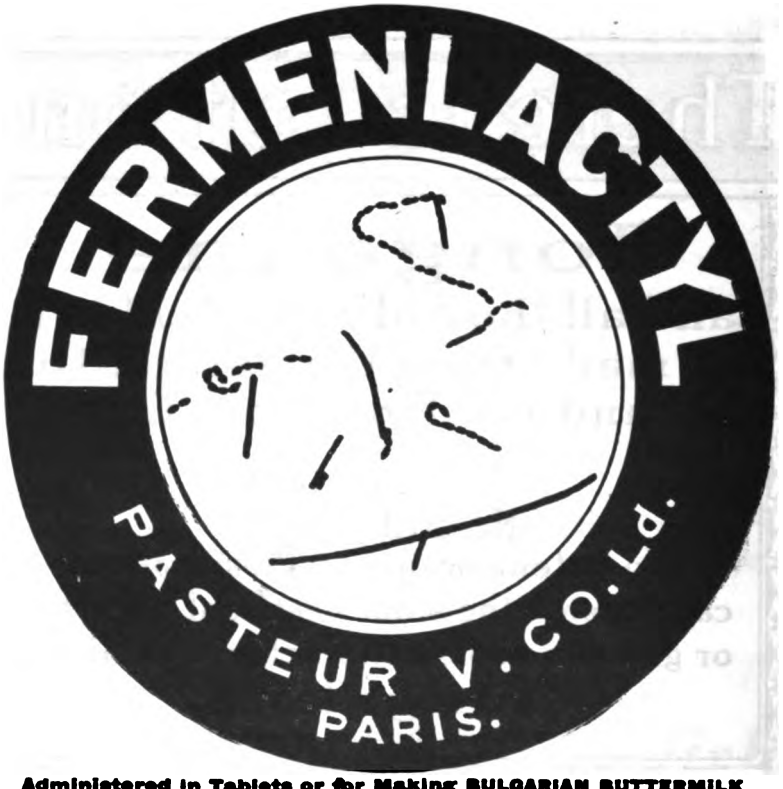


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*Journal American Medical Association*, January 22, 1910, Folio 261.

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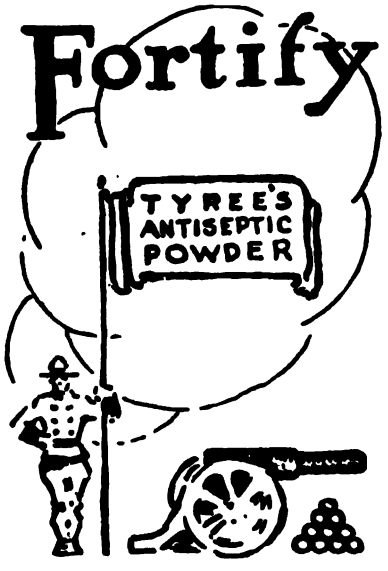


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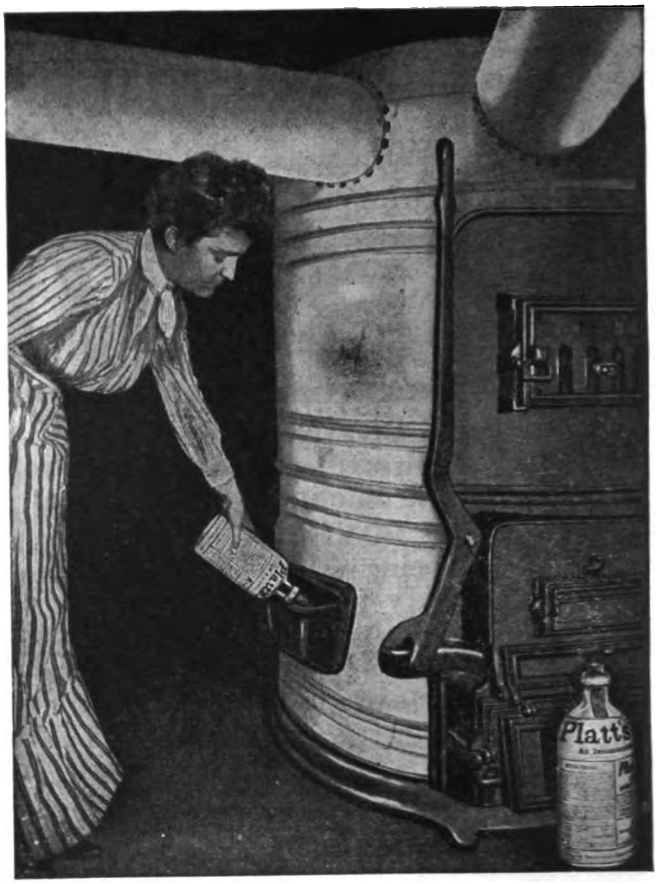


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## Original Articles.

# PRINCIPLES UNDERLYING THE STUDY AND TREATMENT OF CHRONIC ARTHRITIS.

BY H. W. MARSHALL, M.D., BOSTON.

The term "chronic arthritis" brings to mind confused classifications, obscure etiologies and unsatisfactory treatments which justly make it unpopular with practitioners, but joint affections are not rare and patients demand treatment notwithstanding the unattractiveness of their troubles. Definite and, as far as possible, scientific conceptions of chronic arthritis are, therefore, particularly needed concerning the rationale of causes and cures.

With these needs in view the writer has devoted himself almost exclusively for several years to the study of arthritic patients and examination of the writings of past generations of physicians who have struggled with the problem. As a result he believes that he has gained a little better understanding of the subject and one which may perhaps be of interest to those who, while they are confronted with its difficulties and obscurities, have had less time or opportunity for its careful consideration. The present paper deals mainly with the fundamental principles involved, and extended discussions of special methods, examples of actual cases and results of treatment are reserved for future communications.

In his work the author has had the great advantage of the frequent advice and counsel of many physicians and other friends, to all of whom he desires to express his obligations and thanks, and in the preparation of this paper especially to Dr. Theobald Smith, Dr. Wm. H. Howell and Prof. W. T. Sedgwick.

Patients may be grouped for convenience into the following clinical classes. (1) Incipient Cases; (2) Moderately Severe Cases without Joint Destruction; (3) Acute Exacerbations of Chronic Disease; (4) Very Severe Cases with Joint Destruction and Disability.

Well-known and fundamental principles naturally governing the treatment of all of these classes are so easily forgotten or neglected that a brief summary of them at the outset may be useful, for proper treatment can only be secured by thorough comprehension of those normal anatomical and physiological features which control the health and ordinary activity of joints and by clear appreciation of the various diseases that may be accompanied or followed by arthritic phenomena. The Etiology of Chronic Arthritis has already been discussed by the author in a previous paper, to which the reader is referred.[1]

### NORMAL PHYSIOLOGICAL CONDITIONS WHICH CONTROL THE HEALTH AND ORDINARY ACTIVITY OF JOINTS.

All healthy joints are constantly being subjected to normal physical, chemical and nervous stimuli through mechanical movements, strains due to body weight, external physical agencies, physical and chemical conditions of the blood, and also to nervous impulses transmitted to and from joints and articular blood vessels through trophic and sensory nerves; and all pathological conditions must arise from departures from these normal relations. Moreover, joints cannot be influenced by any other means than by those just enumerated. The health of all organs and tissues depends upon normal physiological processes going on within tissue cells by which living material is built up from food substances of the blood, energy set free, and waste products eliminated. It varies in degree according to variable combinations of these physical, chemical and nervous stimuli, and it depends also upon the inherent properties of the protoplasms themselves, as protoplasms vary greatly in different tissues and with different individuals.

Individuals may be considered to be "robust" or "delicate" according as the sum total of their various tissue resistances is respectively great or small. Moreover, the interaction of different tissues, each upon the other, which doubtless influences this sum total of cellular tissue resistance and eventually determines to a large extent the general health of the individual, sometimes affords an opportunity for the study of individual organs by observing the effect of the conditions of other organs upon the one selected for study. With joints it is possible to estimate to some extent the various degrees of arthritic resistance and normal activity by observing the pathological conditions in organs that are contributing deleterious substances to the blood stream and thus are affecting articular structures, either directly through chemical and physical stimulation of joint tissues, or indirectly through chemical and physical stimulation of nerve cells in the cord which, in turn, react by transmitting unusual and perhaps undesirable stimuli to joints and articular blood vessels.

We are met at the outset by a significant fact, namely, that with diseases of other organs arthritic phenomena are comparatively infrequent, a fact which must be interpreted to mean that joint resistance is generally sufficient to withstand those abnormal blood states to which joints are frequently exposed. The small percentage of cases of this kind which do display arthritic phenomena must apparently either represent joint tissues of poor resistance or exceptionally abnormal conditions of blood and lymph, or else abnormal conditions in controlling nerve cells. It is a familiar fact that severe infections often occur without any arthritic phenomena, while at other times even mild infections of the same kind may have associated with them severe joint complications. It seems resonable, therefore, to conclude that, while the joints, as a rule, are peculiarly healthy and resistant, they may occasionally be weakened or non-resistant even to an extreme degree.

As will appear later, this idea of variable resistances in the cell protoplasms of various tissues or organs, including, of course, the joints, coupled

[1] Etiology of Chronic Arthritis, Johns Hopkins Hosp. Bull., July, 1910.

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with the idea of variability in stimuli from without, is of fundamental importance in scientific diagnosis as well as in prognosis and rational treatment. Again, it must not be forgotten that the former, cell resistances, are particularly obscure and are dependent upon the stimuli from without and upon congenital peculiarities of the protoplasm.

### DISEASES ACCOMPANYING OR ASSOCIATED WITH JOINT LESIONS.

Diseases which occasionally may influence the health and behavior of joints comprise a long list that includes nervous, infectious and constitutional affections, the more important of which will now be mentioned, because they must not be forgotten or overlooked when seeking for the causes involved in any given case.

Acute articular rheumatism, gout, rheumatoid arthritis, osteo-arthritis, influenza, scarlet fever, typhoid fever, bacillary dysentery, amebic dysentery, malaria, pneumonia, septicemia, tuberculosis, gonorrhea, syphilis, tonsillitis, oral and nasal sepsis, otorrhea, pulmonary abscess, gastro-intestinal disturbances, diseases of thyroid gland, spleen, lymph nodes, infections of the gall bladder, kidneys, male and female genito-urinary tracts, hemophilia, scurvy, anemias, lead poisoning, syringomyelia, tabes dorsalis, paralysis agitans, congenital heart disease, puberty, pregnancy, menopause, erysipelas, furunculosis, psoriasis, osteomyelitis and chronic suppurative conditions.

(See Arthritis Deformans, R. Lewellyn Jones; and Bulletin of the Committee for the Study of Special Diseases, T. S. P. Strangeways, for statistics of relative frequency of associated diseases.)

Sometimes only one focus of infection contributes its products to the blood stream, but sometimes several foci may exist. At times one cause may initiate the arthritis and other causes perpetuate it. Sequence in time of development of several questionable factors, therefore, should be considered, as the oldest lesions may be primary causes and others be merely accompaniments that are cured with removal of the primary trouble; but these secondary accompaniments contribute their pathological products to the blood also and may thus exert an influence upon the joints. Gastro-intestinal toxemias resulting from the inactive life of patients often seem to be grafted on to the original process, and perhaps sometimes perpetuate it.

As might be expected, common diseases appear more likely to be common causes of joint disease than rare disturbances of internal organs which some investigators would invoke to explain obscurities associated with arthritis. According to the writer's experience, while the latter may indeed be very rarely contributing factors, the commonest causes are apparently bacterial infections, digestive disturbances, abnormalities in metabolism associated with puberty, pregnancy and the menopause, and unstable conditions in nerve cells controlling the joints.

### METHODS OF TREATMENT OF CHRONIC ARTHRITIS.

Methods of treatment consist in application of appropriate remedies, and in attempts to restore physiological relations in joints; to repair defects due to strains, traumata and excessive mechanical irritation; to overcome abnormalities of the blood and do away with harmful exposure to climatic influences; to rectify, as far as possible, derangements of the nervous control and to thus increase health and resistance of the joint tissues.

Some remedial measures act locally, others are employed in treatment of diseases of organs when these stand in causal relationship with joint disease; and there are also general hygienic measures to be applied.

Local treatments are applied to lessen excessive mechanical irritation, increase or diminish blood supply, alleviate pain, prevent and correct deformities, restore mobility and remove pathological tissue, hypertrophied villi, joint mice, loose cartilages, etc. These objects are attained by orthopedic apparatus, plaster casts, splints, bandages and strappings; by hot and cold applications, bakings, Bier's passive hyperemia, massage exercises, electricity and operations of various kinds.

*Diseases of other organs standing in causal relationship to joint diseases* can exert their influence directly upon joints only through the blood, and indirectly through the action of blood upon nerve cells with production of unusual nervous stimuli, as already explained. Blood presumably owes any irritating qualities to the presence of particular toxins, to undue accumulations or deficiencies of normal products of metabolism of tissue cells, and probably also to its mere physical properties. Nervous stimuli depend upon the state of the blood and upon inherent peculiarities of nervous tissues, just as joint conditions depend upon these states of the blood and inherent peculiarities of joint tissues; and when nerve cells are robust and healthy the nervous element in joint disease is at a minimum; when they are weak or diseased, the nervous factor becomes of greatest importance. Irritants circulating in the blood stream are most obscure in their nature and are called toxins, metabolic products and internal secretions, but comparatively little is known of the chemical constitution or molecular grouping by which they exert their influence upon joint structures. Bacterial toxins, which are among the best recognized of these complex organic bodies, can be identified only by their therapeutic effect upon animals, although it is possible to cultivate them outside the body *in vitro*. The precise chemical nature of metabolic products of organ activities are quite as poorly understood. In gout it is known that sodium mono-urate circulating in the blood is somehow concerned with the pathological process, but physiologists are still discussing whether gout represents defective diminished elimination by the kidneys, excessive production by the body tissues or faulty processes in liver associated with conversion of purin bodies of the food, or whether various factors are combined. Variability in vital resistance of joint tissues has

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to be considered in gout as in other types of arthritis, but the exact chemical reaction upon joint tissues of the soluble urates in the blood is not well understood.[2]

In lead poisoning the metallic element gets into the circulation presumably as some organic combination of the proteid molecule and exerts its selective action especially upon nervous tissues whereby arthritic pains are occasionally an accompaniment of this disease, but here again the exact chemical substance which reacts upon nervous tissues is unknown.

Products of bacterial activity in the intestinal tract are absorbed into the blood and in cases of acute ptomaine poisoning make their influence very evident; also there is absorption of products from bacteria habitually present in the intestinal tract which may accumulate in the blood from over-production, or possibly through diminished elimination by the kidneys, and these are capable, apparently, of producing joint changes much as excess of uric acid derivatives in the blood may produce arthritis when patients have susceptible joints; but the exact chemical nature of these bacterial products has not been determined.

Relations between joint diseases and lesions of uterus, thyroid gland, spleen, lymph nodes, lungs, heart, kidneys and formed elements of the blood itself undoubtedly exist, yet it is not well understood whether such joint lesions are induced by bacterial infections, disturbances in metabolism of tissue cells, reflex nervous derangements or combinations of these; for blood conditions always are obscure, and although it may contain irritants, yet routine blood examinations offer little aid in explaining the existing states.

Control of the properties of blood which are so vital to health of joints, therefore, must be made by search for, and treatment of, different organic diseases and infections; and while it is not possible to enter into details of treatment for all derangements of organs, fevers and foci of infection, yet it is necessary to understand and remember their existence in order to accurately interpret and treat any given case.

*General hygienic methods of treatment* increase metabolic functions of tissues generally and help to restore depleted conditions such as are frequently observed at the onset of arthritis. Through the action of these general measures the blood becomes altered and contains different proportions of food substances and metabolic products from all tissues, while foci of infection, if they exist, are more successfully resisted, as the protective functions of the tissues against foreign substances are stimulated and blood flowing through joints exerts healthier action. Nervous stimuli presumably also are changed by this altered blood condition and joints are able to perform their physiological functions more perfectly and consequently slowly begin to improve.

General hygienic methods consist in the regulation of personal habits, administration of medicinal tonics and physical therapeutic measures.

[2] A. Magnus-Levy: Uric Acid in Gout. Am. Jour. Med. Sci., vol. cxl, November, 1910, pp. 625–643.

*Personal habits* should be carefully investigated, occupations inquired into and changed when necessary; diet, sleep, rest and exercise regulated; and mental disturbances and drug habits ascertained.

*Medicinal tonics* comprise such drugs as strychnine, quinine, iron, arsenic, iodides, phosphates and others which exert their influence more or less upon the protoplasms of all tissues and help to repair defects that each is subject to.

*Physical therapeutic measures* consist in application of heat, light, mechanical and electrical stimuli in various forms of baths and massage for the sake of their tonic effects. For the various forms of special treatment reference must be made to the voluminous literature upon the subject, as they include sun and air baths; artificial radiant heat baths; hot, neutral and cold water baths, and these are often combined with mechanical friction or electricity and chemical substances in most confusing combinations. The importance of general hygienic measures in treatment of arthritis is here especially referred to as these measures will be frequently mentioned in what follows.

The writer uses for routine treatments at hospital clinics the pharmacopeial preparations, tincture of nux vomica, and elixir of iron, quinine and strychnine phosphates for general tonics, and calomel, magnesium sulphate, sodium phosphate, fluid extract of cascara sagrada, and rectal lavage with warm water at frequent regular intervals to clear the intestinal tract and regulate digestive functions. Usually treatment begins by purging with calomel and magnesium sulphate, and this is followed for several weeks with daily rectal irrigations. Finally the irrigations are given less frequently, and fluid extract of cascara sagrada and sodium phosphate are prescribed to assist evacuation upon days on which irrigations are not used.

Diets have to be regulated in order to prevent reaccumulation of foods in the digestive tract and to avoid continuance in formation and absorption of bacterial irritants from the intestine that injure joint tissues. Diets also must be so regulated as to supply sufficiently large amounts of food materials to maintain the health of other body tissues and to keep up the individual's general resistance and vigor. Accurate rational directions for diet regulation in arthritic disease the writer is unable to give at present, but reliance can be placed upon simple modifications in quality and amount of food until the right diet is experimentally discovered. This important subject of diets in arthritic diseases the writer now has under consideration, and which it is hoped may furnish the basis of a future paper.

Strong hydrotherapeutic measures should not be prescribed for arthritis because this class of patients do not respond well to the more vigorous methods, and the writer is informed by Dr. J. H. Kellogg that he uses only mild ones at Battle Creek Sanitarium, where he has found from his extensive experience that arthritic

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patients will not bear strong, continuous stimulations. Sun baths and changes in climatic environment seem especially adapted to arthritic and rheumatic states. Mild irritants that have acted for long periods of time in producing joint lesions should, therefore, be combatted by mild remedies for long periods in order to restore normal functions, and more stimulating measures should be reserved for occasional use to upset recurring lapses into chronic pathological states.

When occupations and circumstances have produced very unhygienic modes of living, simple regulations of personal habits sometimes are sufficient to start patients towards recovery. Inquiry into personal habits is too often overlooked, and not infrequently failures of treatment may be traced to neglect in ascertaining and rectifying simple yet most important errors in habits. Sanatoria and health resorts scattered throughout the country furnish interesting and convincing evidence of the frequent efficacy of simple hygienic measures in cure of diseases. These establishments prosper because they cure patients by correcting defective habits while patients are kept entertained and occupied with a routine which constitutes each particular "cure." These methods are often scornfully regarded on account of their simplicity, yet it is just as well to admit their importance as very many persons are benefited, and the fact that some patients are made worse and that recurrences occur after these simple measures are stopped should not lead us to overlook the fact that many improvements undoubtedly do take place. Instead of underestimating the efficiency of simple methods, it is safer to consider that regulations insisted upon at sanatoria if permanently adopted would very often result in permanent improvements.

### INCIPIENT CASES OF ARTHRITIS

Patients frequently seek medical advice for slight pains and stiffness in various joints, and for swellings which make their appearance upon the fingers, in order to learn whether severe arthritis is likely to develop, and what should be done to arrest its progress. It is often impossible to say whether or not there will be serious trouble later, but the best estimate generally depends upon application of such ideas and physiological principles as have been explained, and although diagnosis and prognosis is often impossible at the outset, yet our methods of treatment are sufficiently definite and may result in cure in spite of our ignorance of precise underlying causes.

It is the writer's custom with incipient cases to obtain accurate ideas of patients' past diseases, their inherited and acquired tendencies, occupations and habits of life; and from a complete but rather superficial physical examination to locate gross abnormalities in organs and active infective foci; also to observe at the time the state of the general health as well as mental and nervous conditions. When active pathological processes are discovered, these are immediately treated, but when only indefinite, mildly suspicious conditions are found, as is often the case with this class, then reliance is placed upon general hygienic methods to correct all irregularities, and if cures do not result, further treatment is then instituted as explained under the next section upon moderately severe types of arthritis.

General hygienic measures have been described, and those applicable to incipient cases consist in administrating tonic medicines, as nux vomica, combinations of iron, quinine and strychnia; or iron, arsenic and strychnia; and in correction of personal habits. The latter are not too greatly restricted in these mild cases, but diets are simply modified when they are obviously defective and the digestive tract is emptied and kept cleared by means already described. It should be remembered that digestive disturbances are numbered among the commonest of maladies and are starting points for deviations from the normal processes concerned with elaboration of food materials for the tissues and that, therefore, treatment of digestive abnormalities is a very important means of changing the quality of the blood and of influencing all organs. Gross errors in habits of sleeping and taking exercise are also rectified. Local treatments are of less importance and when needed consist in mild stimulation with radiant heat, high-frequency electrical applications and warm dry protective coverings for the affected joints. Salicylates are also indicated in small doses at times when pain interferes with sleep.

Patients who do not improve are then treated as outlined under moderately severe types of arthritis, but the dividing line between these two types is an arbitrary one and transitional stages occur. This classification is simply convenient for descriptive purposes.

*Summary.* — Diagnosis in incipient arthritis depends mainly upon personal histories of patients and superficial general examinations; prognosis is very often impossible to determine at the outset; treatment is directed towards undoubted pathological conditions when these exist, and otherwise consists in general hygienic measures.

### MODERATELY SEVERE TYPES.

These are most typically represented by chronic, well-developed polyarticular joint diseases in which joint destruction is slight and changes have not gone on that require manipulations or local operations. Monarticular types of moderate severity, however, have also to be considered in this class.

Preferably these patients should be kept in a hospital under observation for a few weeks until all suspicious circumstances revealed by histories and the unusual states found in examinations have been carefully considered, and until interpretation of these data is accomplished and an idea is gained of the relative importance of mechanical and nervous factors, of external influences and influences acting through the blood, after which subsequent treatments may be outlined as seems best.

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Questions often arise with regard to what shall be done with patients who have only suspicious conditions in various organs but no well-defined, active lesions. Shall all these suspicious foci be radically treated like well-defined ones on the assumption that they really are the causes, although obscure, and that the arthritic process is likely to continue until they are removed? Concerning this question observation shows that there are occasional patients with obstinate arthritis who have been subjected in turn to many radical operative treatments without relief. Treatment to them has meant unnecessary discomfort and a series of expensive experiences in addition to their arthritic disease; moreover, such examples seem difficult to avoid when patients are plucky and willing to try all remedies, and their arthritis is obstinate, because there is such diversity of opinion among the medical profession regarding causes and treatments. Better understanding of joint diseases is needed, therefore, to avoid injury from attempted treatment of incurable cases as well as to restore health in those who do respond to treatment.

It is well in our present stage of enlightenment to recognize that some patients cannot be cured, although theoretically they should be, because it is a fact that some are not relieved and failures seem due in part to lack of recognition of underlying causes when the disease is in its early stages and can be most advantageously attacked.

*Methods of treatment in moderately severe cases of chronic arthritis.* — Patients are put to bed and kept out of doors as much as possible; diets are reduced to meet the requirements of the inactive life, and modified as tests indicate. Stomach and intestines are cleared of food accumulations to prevent possible bacterial toxemias; and general medicinal tonics and drugs for relief of pain are used sparingly, the latter only to insure sleep and comfort. Passive movements must be given daily or patients allowed to arise from bed a few hours each day if joints show tendencies toward stiffening, and gentle massage may be used to supplement passive movements. Pathological processes in other organs, if unquestionably active, are treated immediately.

Within a few weeks a considerable proportion of cases will show distinct improvement; others will show very little change; and the remainder will grow worse. Those showing improvement should continue to receive the same treatment, and if suspicious foci have been located in other organs, these should be observed until doubts are dispelled or confirmed. Sometimes these foci disappear under hygienic treatment and at other times they become more definite and localized, requiring attention before complete cure is effected. Cases which show no improvement in the first few weeks should, nevertheless, have their treatment continued unchanged, as general hygienic measures act slowly, while the advantage of removing merely questionable foci cannot be told until the focus is removed, and experience demonstrates that such operations frequently have little effect upon the joints. When the disease does not begin to improve within a few months, or grows steadily worse, decisions have to be made which depend upon the particular circumstances presented by each individual case. The safety, comforts and dangers of neglect of conservative methods; the risks, discomforts, benefits and disappointing results of operative procedures; the rate at which arthritic disease is progressing; the confidence and mental attitude of the patient; the degree of definiteness of suspicious lesions, have all to be considered.

At this stage before radical treatments are instituted upon uncertain grounds attention is urgently directed once more to the nervous control of joints, as it is the writer's belief that many cases are primarily of neuropathic origin, and at the risk of repetition reasons for this opinion will be given.

It should be remembered that the nervous system controls every important organ and co-ordinates all activities as is shown by the general health of the individual; and the influence of nervous control of joints may readily be observed in the very destructive joint changes following spinal cord lesions, as in syringomyelia and tabes dorsalis.

In the more severe cases of rheumatoid arthritis (atrophic arthritis) there have also occasionally been found appreciable pathological changes in spinal cord and meninges when they have happened to be examined.

The physiological relationships between nervous tissues, joint tissues and body tissues may be recalled to make clearer the ideas which follow:

Nerve cells continually influence body tissues (including joints), directly through trophic and vasomotor nerves, and also, by modifying metabolic activities of different tissues in varying degrees, indirectly influence all tissues through interactions among the latter. Conditions of the blood stream are changed and proportions of metabolic products from each tissue vary as the result of nervous stimulation and activity.

Nerve cells are continually affected by sensory nervous impulses, by the metabolic products of organ activities and food products, and occasionally by the metabolic products of bacterial activity in the blood when infective foci are present.

Joint tissues and all body tissues, as explained, may be influenced through trophic nerves, metabolic products of organ activities, food products and occasionally bacterial products in the blood.

Nerve cells, joint tissue cells and all body tissue cells exhibit variable degrees of vitality, all may be robust or delicate, and many theoretical combinations are possible. For example, lung tissues may be delicate and other tissues vigorous in one individual; kidneys alone be defective in another; liver and gastro-intestinal tract exhibit abnormalities in a third; and *delicate joint and nerve tissues* be the most pronounced defects of a fourth. The latter theoreti-

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cal possibility is the one to which attention will be directed, and evidences for its existence sought in pathological changes which can be anatomically demonstrated as well as suggested by functional abnormalities that may be clinically observed.

Evidence to be readily accepted must rest upon a visible or recognized basis; biological principles and physiological laws are more likely to be stigmatized as too theoretical; but so many conditions depend upon invisible physical and chemical processes going on within tissue cells that it is unwise to ignore these biological and physiological principles as they constitute the only adequate means of interpreting invisible metabolic disturbances of cell activities. Neuroses belong especially to this class of disturbance having no visible anatomical basis, and lesions in rheumatoid arthritis seem to be just at the transition line between visible and invisible processes, as some of the severest cases exhibit visible changes in spinal cord substance, peripheral nerves and diffuse patches of spinal meningitis while mild cases do not show any visible lesions.

(Reference should be made to the chapter on morbid anatomy of rheumatoid arthritis in R. Lewellyn Jones' book, "Arthritis Deformans," for an admirable presentation of anatomical changes observed in that disease.)

Gross pathological evidence will be disregarded in this article and attention directed to those functional disturbances in various organs which may possibly signify abnormal metabolic processes taking place in their controlling nerve cells. In rheumatoid arthritis (atrophic arthritis) muscular atrophy often occurs so rapidly and to such extreme degree that it cannot be satisfactorily explained by atrophy from disuse; moreover, special muscle groups are usually affected; cutaneous pathological changes include pigmentation, sweating and, in later stages, dryness and harshness, with desquamation and thinning of the skin; local circulatory disturbances are seen in the waxy white fingers and cyanotic appearance of the extremities. Sensory disturbances are observed in premonitory sensations of tingling and numbness, stinging and burning feelings, soreness, streams of pins and needles and muscular cramps. Tendon reflexes are increased. Visceral disturbances are represented rarely by gastric crises, and frequently by light or severe abnormalities in digestive functions.

The following case typically illustrates many of these points.

Single woman, thirty-seven years of age. Arthritis developed at three years of age; five severe acute attacks up to eighteen years of age with complete restoration in function after the first ones. Continuance of attacks of greater severity involving all joints with permanent impairment in joint function until patient became confined to wheel chair or bed. This disabled condition she has now been in for several years. She was a delicate child and had scarlatina, measles, pleurisy, influenza, carbuncles and tonsillitis, also a nervous collapse which lasted two years; and further injured her health from study when at college. She is a small, slightly built woman with lively tendon reflexes and wonderfully good mental development, and her readiness to try new remedies has resulted in operations upon tonsils, nose, mastoid, joints and gall bladder, besides various physical therapeutic treatments. No very definite infective foci have been discovered by any of the competent physicians who have treated her, and she has progressively grown worse. Remedies which have temporarily arrested the disease have been a quiet life out of doors with attention to simple hygienic measures, and these restored her health from a bedridden state to one in which she could walk again, although with difficulty. Continued overexertions brought on another acute attack from which recovery was very slow until she was again sent to a quiet country place and kept out of doors with only sufficient entertainment to insure contentment; and again the joint pains lessened, muscular spasm relaxed and joint motion appreciably improved.

With each attack there has been excruciating pain, fever, extremely rapid muscle atrophy, cutaneous disturbances and periods of indigestion, and each recovery has been characterized by restoration of muscles, return of normal digestion and subsidence of muscle spasm, articular pains and cutaneous disturbances. When the patient had an acute mastoid infection of great severity, there was marked diminution in arthritic pains and increased mobility of the joints which persisted for a month or so afterward. The bacterial toxins of the mastoid infection did not increase joint symptoms, as might be imagined they would do if articular structures were susceptible to bacterial poisons. Their toxins, however, produced fever and accelerated tissue metabolism, so that the blood temporarily was changed and presumably acted in different manner upon all tissues, *including joints and nerve cells controlling the affected joints.*

Similarly there has been noticed in this patient very abrupt cessation of articular pains and increased mobility of joints following ether anesthesia. The effect was very striking and transformed excruciatingly painful joints immediately into much more comfortable ones as soon as recovery was made from the anesthetic. Relief from symptoms in this instance lasted nearly two weeks before pains and spasm slowly returned. Ether anesthesia is known to increase metabolism of the tissues, also exerts profound influence upon nerve cells, and while nothing can be proved by these observations, yet the unusual response of nervous tissues may indicate pathological processes in them.

Another point in favor of nervous instability in this patient is shown by gastric disturbances noticed when arthritic pains are worst; and these visceral manifestations have caused so much discomfort that cholecystotomy was performed, but only an inflammatory state was discovered. Bacteriological examination of stools and chemical examination of the urine have shown exceptional freedom from intestinal putrefactions. Relief afforded by salicylates, tonic hydrotherapeutic baths and electrical treatment harmonizes with the idea that the nervous element is a very important one in this instance, and absence of any definite focus of infection after prolonged search and failures of radical treatments strongly help to confirm it, as does also the long course of arthritic disease beginning in early childhood.

These data probably will not seem convincing as they are read for the first time, but deliberation and attempts at other explanations of these clinical facts strengthen the plausibility of the neuropathic theory,

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which has very many adherents among those who are best informed.

The writer wishes to point out that many elements enter into the etiology of each case of arthritis and that nervous influences are constantly at work, sometimes in a normal, unobtrusive manner and sometimes in obvious pathological ways; and that when the degree of nervous derangement is great, arthritis may properly be considered of neuropathic origin.

*Summary.* — It is always impossible to understand exactly the complex relations that exist between body tissues, the endless series of influences that are exerted to and fro continually between every organ upon every other one, by means of nervous stimuli and shifting states of the blood. Such interactions, however, obviously do exist, and it seems reasonable to suppose that when nerve centers which control joint structures directly or when nerve centers which control other organs indirectly influence joints through the blood, if these nerve centers are seriously defective, then prognosis for joints is poor, irrespective of the question whether such nerve cells are congenitally weak or have acquired defects from injuries sustained in severe infectious fevers, because normal metabolic function of nerve cells can be restored with difficulty when they are once seriously injured.

Estimation of the nervous factor in the etiology of any given case of arthritis can be made only imperfectly by the personal history and suggestive physiological manifestations in various organs, and the practical effect upon treatment is simply to delay radical measures still further and to encourage continuance of general hygienic treatments which are often efficient means of restoring the health of nerve tissues as well as of all other tissues. But if improvement does not occur, operations will probably be resorted to sooner or later whether they are beneficial or not, on account of the doubts and differences of opinion which must necessarily arise.

*Vaccine treatment* should be given a trial while conducting hygienic treatments and before operative procedures are instituted, because injection of bacterial cultures after the living organisms have been artificially destroyed has frequently been tried upon infectious arthritis with some temporary improvement of arthritic conditions.

Such bacterial products undoubtedly cause a general reaction in the tissues and there are temporary improvements corresponding to temporary altered states of the blood whereby local infections are more successfully resisted for the time, but joint conditions which have come on and become chronic from long residence in the tissues of resistant bacteria are much less favorably influenced by inoculations of bacterial products than acute infections which have already been successfully resisted and localized by the individual. In the latter conditions injection of bacterial products is frequently followed by rapid clearing up of infective foci, and the inoculation reaction appreciably accelerates the mastery over the parasitic micro-organisms.

In the writer's limited experience there have not been very many permanent benefits observed that can be definitely attributed to vaccine treatment, but investigators who have had more experience are confident that considerable benefit is derived not infrequently, and it is conceivable that bacteria in the tissues in chronic as well as acute states occasionally exhibit sufficiently low degree of resistance to enable the general tissue reaction from inoculations to just turn the balance in favor of the individual and to overcome the parasitic bacteria.

*Operations upon other organs* include removal of tonsils and teeth; operations upon nasal bones and sinuses; curettage and drainage of osteomyelitic foci in many localities, curettage of uterus; salpingectomies, hysterectomies, colostomies, cholecystotomies and operations for suppurative conditions in various organs. Special indications cannot be given, as each depends upon the special circumstances which exist in each individual case, and some of them, as, for example, hysterectomies, have not been done for arthritis alone, but because local disease of the uterus demanded its removal, yet in these cases severe arthritic disease which existed simultaneously has been permanently cured.

*Local treatment in moderately severe types* which show no serious joint destruction consists of protective or stimulating measures. Normal muscle balance tends to be destroyed by atrophies, also by spasms in various muscle groups, and joint contractures consequently tend to occur and may be treated by local stimulation of affected muscles, massage and electricity. Normal position may be retained with aid of orthopedic apparatus and plaster casts. Synovial membrane hypertrophies due to excessive mechanical irritation require measures to restrict and minimize motion, by bandages, adhesive strappings and plaster casts.

Local measures include bakings, hot and cold applications, dry and moist applications, chemical counter-irritants, massage, passive motions, Bier's passive hyperemia, various forms of electricity and radiant heat; and all are rather indiscriminately used to combat pain and swelling. Some cases are benefited temporarily and others are not influenced, but prediction cannot be made what the effect will be in many instances until trial is made. High-frequency electrical treatment relieves arthritic pain often in atrophic arthritis and gout. The physiological action of local measures usually is a double one through direct stimulation of joint tissue cells and by modifications of blood and lymph supply to the parts. When there is reason to suppose the blood is at fault, caution should be exercised not to wear out the tissues that are already struggling with unfavorable conditions by over-stimulating them with therapeutic agents. Protective methods used for various joints will not be described in detail, — the strappings and supports for feet; strappings, bandages, casts, iron braces for knees, hips and spinal column; plaster jackets, corsets, collars, shoulder braces, cuffs, gloves and other appliances used by orthopedic surgeons.

From what has already been said concerning normal physiological factors that control health of joints it will be evident that local measures are of secondary importance and palliative in cases

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not produced by mechanical and external agencies, but nevertheless are useful. Mild treatments should be tried first and their results closely watched, as mild irritants have acted for long periods of time to produce the pathological conditions, and restoration can be brought about best through similar mild prolonged treatments.

ACUTE EXACERBATIONS OF CHRONIC ARTHRITIS.

These are treated by the same principles that are used in chronic processes, but require modifications on account of their severity. Acute exacerbations of chronic rheumatoid arthritis (atrophic arthritis), acute onsets of arthritis due to bacterial infections, acute gouty attacks and acute rheumatic fever are confused because they are often much alike in their arthritic manifestations and require similar local treatments. Underlying immediate causes of acute attacks are obscure, perhaps being due to sudden entrance into blood stream of irritating substances in unusual amounts or of unusual toxicity; or perhaps are caused by the sudden breaking down of cell resistances in joint or nerve tissues. These suppositions are supported by recognized facts. Showers of uric acid in the urine accompany acute exacerbations of gout; rapid development of bacterial infections are followed by abrupt onset of arthritic symptoms as soon as joint resistances are overcome. Joint and nerve tissues react variably according to the severity of stimuli which are acting upon them and according to the resistance of their cell protoplasm; and premonitory symptoms and abrupt onsets of arthritis so often observed can be easily understood upon this biological basis. When irritants in the blood are of moderate severity and joint cell resistances are of moderate degree, slight premonitory symptoms occur and subside as the tissues react successfully at first before they finally break down in their normal function, but when weak tissues are overwhelmed with irritants of greatest toxicity, they succumb with surprising abruptness. Abrupt onsets of nervous symptoms, as, for example, delirium and mania, probably are manifestations of similar overwhelming conditions that suddenly destroy the physiological balance in nerve cells, and nerve cells which control joints and articular blood vessels show pathological conditions suddenly arising in them by suddenly producing arthritic lesions. The actual case cited in this article is an example which the writer believes to have an important neuropathic element and exhibits at times sudden onsets of arthritis with extreme symptoms of prostration, fever, sweats and involvements of all joints in an exquisitely painful process.

Underlying causes of acute cases must be sought by methods which have already been described, and methods for local treatments also remain unchanged, but are applied with greater vigor. Inflamed joints are kept perfectly quiet by means of splints or plaster casts, thus entirely removing mechanical irritation; gouty attacks in which subsidence can soon be expected may properly be treated by active local stimulation of the joint tissues with electricity to temporarily increase cell resistance and metabolism, and some gouty patients find they are thus able to avert milder attacks if such electrical treatment is taken immediately when first symptoms become evident. With other patients such active local stimulation seems inadvisable when the blood is likely to contain irritants for a considerable time, and stimulation then may aggravate instead of ameliorate local joint conditions.

Variations in external physical influences should be prevented by dry protective coverings applied to the affected joints. Increasing the blood supply sometimes means increasing the amount of toxic influence, while decreasing the blood supply means diminution in necessary food products of the blood and perhaps an inadequate removal of waste products. The best circumstances in each instance can only be determined experimentally, and in practice thermal measures of heat and cold may be tried cautiously, and if improvement occurs they are persisted with, but abandoned if no relief is afforded.

Drugs are almost always given to control pain and are justifiable on account of the important influence pain has upon the resistance and total metabolism of the individual.

VERY SEVERE TYPES OF ARTHRITIS.

These fall into three groups; those in which mild irritants have acted for a long period and caused slow disintegration of joint structures; those in which severe bacterial irritants cause more rapid destruction of the joints, and those due to mechanical and traumatic causes. Conditions seen in gout, certain cases of rheumatoid arthritis (atrophic arthritis) and osteo-arthritis (hypertrophic arthritis) represent the first group, and bacterial infections with organisms themselves growing in joint tissues are examples of the second class.

Treatment of the first class consists principally in correction of deformities and in restoration of joint motion. Attitudes habitually assumed during acute stages of the disease often result in permanent deformities, as, for example, the forward bending of the cervical spine due to propping the head up with pillows, and the stooping attitude of such patients from fixation of the vertebræ by bony overgrowths when in improper positions in bed. Faulty attitudes lead to faulty physiological functions, and bony overgrowths in joints of the extremities often require operative measures to remove obstructing bony tissue and to restore motion. Osteotomy of the femur is a familiar operation in treatment of ankylosis of hip with deformed position, and this procedure helps to restore the normal attitude and muscle balance, thus preventing secondary deformities, and consequently assists in maintenance of the individual's normal physiological functions.

The second class, tuberculous, gonorrheal, pyogenic and other infections of the joints, require aspirations, arthrotomies for washing out joint cavities and for removing necrotic material. Various injections have been employed; for

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example, oils to prevent post-operative adhesions and oxygen to inhibit growth of anerobic micro-organisms. Frequently arthrotomies are performed for other reasons, to remove hypertrophied synovial membranes and loose cartilages, but none of these methods will be discussed and are simply mentioned to complete the outline of clinical classes proposed at the beginning of the paper.

RÉSUMÉ.

An attempt has now been made to describe as exactly as possible how joints may be influenced by normal physiological factors; mechanical, nervous and external stimuli; and by physical and chemical properties of the blood; and to enumerate the different diseases that may alter normal nervous control of joints and normal states of the blood.

Physiological pictures of metabolic activities going on in all living tissues, and the ways by which different ones react upon each other, have been described, because normal states of the blood and of nervous tissues depend upon normal functions and reactions of every individual organ.

Attention has been called to the fact that vital processes going on within tissue cells cannot be accurately measured at present by chemical or physical means, and in early stages of many diseases intracellular pathological processes leave no visible anatomical evidence of their abnormal action, notably in nerve cells which produce abundant physiological evidence of deranged function but only meager visible proofs of it, so that physiological effects produced upon other organs furnish the only adequate means of recognizing and estimating the intensity of these invisible, intracellular pathological processes that act through nerves and blood.

All manifestations of arthritic disease, including joint defects, lesions of other organs and all clinical symptoms can be more readily understood upon this physiological basis as representing departures from normal conditions that exist in healthy states.

Description of methods of examination and special methods of treatment have purposely been avoided as much as possible, and confusing nomenclatures have also been kept in the background in order to make clearer the importance of these principles; yet it should be recognized that adequate examinations and skill in application of special methods contribute as much as general conceptions to success in treatment. The latter, however, are so easily forgotten or neglected, and their neglect is responsibile for so many failures, that they are here emphasized. Application of these principles will establish their value in determining why some patients are curable and others are non-curable.

*Permanent cures of arthritis* depend upon permanently removing the causes which are producing the disease, and this is possible, first, when infective foci are present which may be completely removed by surgical means; secondly, when arthritis is produced by acute infectious fevers which subside and no longer exert their influence; thirdly, when defective metabolic processes in tissue cells can be permanently altered into healthy activity, and, finally, when defective personal habits and unhygienic occupations are recognized and may be regulated.

Infective foci may be permanently removed when they occur in tonsils and teeth, and when chronic suppurative conditions elsewhere can be radically treated or removed. Obstinate cases of fecal impaction may cause severe arthritis, and permanent cures are possible when such unsuspected intestinal conditions exist that may readily be prevented from recurring. Operations upon the gastro-intestinal tract which restore normal relations in it and prevent bacterial toxemias theoretically also may permanently cure arthritis.

Defective metabolic processes in tissue cells that are independent of bacterial action often are difficult to permanently restore to a normal state, and success in treatment here depends at present mainly upon early applications of simple hygienic measures before metabolic abnormalities have become too extensive or too chronic.

Regulation of defective personal habits and unhygienic occupations are the simplest, also one of the most important and most efficient, means of increasing the number of cures of all types of arthritis.

*Incurable cases* of arthritis are represented by bacterial infections of vital organs that cannot be operated upon and which are resistant to general hygienic measures. Examples are also seen in nervous maladies in which there are serious defects of nerve cells that cannot be reached; and as already mentioned, also in patients whose unhygienic occupations and faulty habits must be continued for financial reasons. Some patients are born with such non-resistant joints that they are almost certain to become impaired in spite of treatment, by repeated attacks of arthritis in acute fevers and infections, and these patients also are likely to become incurable.

Paul Ehrlich's apparently successful treatment of syphilis by means of an arsenical chemical compound which destroys the spirochetes of that disease in the tissues without injuring the tissue cells of the host arouses the hope that he may be able to prepare other chemical substances in the same purposeful manner that he has done with syphilis, that will be specific for other parasitic cells, common pyogenic micro-organisms and others. Such specific chemical substances would be of inestimable value in combatting bacterial diseases of inoperable vital organs, and would appreciably lessen the numbers of incurable arthritic patients. Theoretically, such chemical substances exerting their toxic effect directly upon foreign parasitic cells in the tissues seem much more likely to be efficacious than injections of bacterial toxins that produce a general protective reaction of the body tissues and indirectly exert greater inhibiting influence upon local foci of infection through temporary changed conditions of the blood.

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Conception of arthritic disease as being either self-limited or incurable is erroneous and unjustifiable upon theoretical grounds and also is unsupported by actual evidence furnished by patients who have been permanently cured. All degrees of acuteness and chronicity of arthritis can be observed, and anatomical changes range from perfectly normal to completely disintegrated pathological states.

Statistics of cures may always be questioned when many influences are acting, but prompt restoration of normal health and function of diseased joints occurs so frequently as soon as rational treatments are instituted that no reasonable doubts exist of their important influence, although absolutely incontrovertible proof seems likely to be an impossibility for an indefinite time to come.

The writer's experience with arthritic patients for several years, therefore, has led him to the following inferences:

(1) The causes of chronic arthritis are many, and arthritis must be considered a symptom of many diseases rather than an entity that is produced always by the same specific cause.

(2) Causes generally are common diseases of other organs, common infections and ordinary defects of personal hygiene rather than obscure and rare diseases.

(3) The most severe deforming types of arthritis that stubbornly resist treatment and the mildest kinds that are easily controlled and permanently cured have similar origins. They differ only in the degree of severity with which the underlying causes act.

(4) Arthritic disease in every stage may often be modified by treatment, sometimes only slightly, and sometimes to a great degree, permitting permanent cures not infrequently.

(5) The best period to initiate treatment is in the incipient and early stages before chronicity is established, although the later stages also must be attended to when the disease has progressed to that degree.

(6) Diagnosis and treatment of incipient and early arthritis depend upon thorough knowledge of physiological conditions that control health and normal activity of joints, and cures result when defects in these conditions can be recognized and remedied.

(7) Proper application of simple hygienic measures and correction of defective personal habits are the most adequate means of treatment in the early stages.

(8) Increased efficiency in treatment depends upon greater clearness in understanding of normal physiological conditions that control health of joints, and also upon increased skill in treating diseases of other organs and infections that act as causes; and such knowledge of physiology and increased skill in treatment should be strongly advocated as well as search for new methods and new causes, for obscure conditions generally may be explained more satisfactorily as confusing combinations of common causes than by assumption of unknown rare pathological processes.

(9) New methods for treatment of chronic arthritis are likely to consist of very dissimilar ones, special drugs, organ extracts, vaccines and physical therapy applied to diseases of different organs and to infections; and better comprehension of physiological conditions governing the health of all organs may also be advantageously emphasized.

(10) Future advances in treatment of arthritis, as in pulmonary tuberculosis, appendicitis and some other diseases, probably will be towards prevention of extensive pathological changes by early recognition of the disease, and treatments will tend to become comparatively simple ones that prove themselves to be efficacious in these incipient stages.

## RADIUM THERAPY.*

BY LOUIS WICKHAM, M.D.,

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### CHARACTERISTICS OF RADIUM.

RADIUM emits three kinds of rays, the so-called alpha, beta and gamma. The alpha and part of the beta (the soft) forms have but slight penetrative power, while certain of the beta and all of the gamma are capable of exerting influence deep within the tissues. In therapeutic work the alpha and the soft beta rays are employed where superficial results are wanted, as in diseases of epidermis and upper corium, or again where caustic action is needed, but as a rule other modes of destruction can be employed which are cheaper and more rapid in their effects. It is the deeply penetrative action of the hard beta rays and of the gamma rays as a whole which gives radium its most practical value.

The power of penetration of these rays is indeed extremely great, but the depth at which these rays act therapeutically depends not only on this penetrative power alone, but also on the number of the rays which attack a given point and on the susceptibility of the given tissue.

This really great penetrative power is illustrated by a recent experiment in which a cancer of the breast 15½ cm. in width was treated for forty-eight consecutive hours with the enormous dose of 19 cgm. of pure radium sulphate spread on shields 28 cm. square. During this exposure an electroscope and a screen of platino-cyanide of barium were held on the opposite side of the breast, and both instruments showed the influence of radium emanations, the former in eight to nine seconds.

Before this exposure the breast was a hard, bosselated, homogeneous mass, but sixteen days later it had shrunken 1 cm. in width, and palpation revealed a series of nodules. The breast was then amputated, and on section one could see that the portion of the tumor lying directly in the path of the rays differed totally from the remoter zones.

* The salient points of a lecture delivered at the Boston Medical Library at the request of the Surgical Section of the Suffolk District Medical Society. This paper is compiled by Dr. Charles J. White, from data left in his hands by Dr. Wickham.

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The former area was divided into several smooth, hard, white, scirrhous nodules, while the latter regions were irregular, pink and encephaloid.

Macroscopically we have just described the results of radiation. Microscopically we shall now see how the rays affected the structure of the epithelial and the stroma cells.

*Action on the epithelial cells.* — This action is destructive, and this destruction is produced by a form of cellular degeneration appearing exclusively in the neoplastic elements, an elective necrosis so to speak, one affecting the whole cell, body, nucleus and nucleolus. The cell becomes enormous and its acidophile protoplasm is condensed into a peripheral membrane. In this mass one sees often pseudo-parasitic or fuchsinophile bodies. The huge nucleus, filling at times almost the whole cell, is irregular, budding, pale or highly colored, and the nucleoli are also greatly hypertrophied. The chromatine appears either in its usual clear, well-defined, filamentous form, or becomes diffuse, the nucleus coloring homogeneously. Or again the chromatine is scattered through the cellular protoplasm, suggesting rupture of the nuclear membrane (karyorrhexis); or the nucleus disappears entirely, leaving visible only its membrane (karolysis).

*Action on the stroma.* — This action shows itself around the islands of pathological epithelial cells by the presence of young connective tissue very rich in cellular elements which penetrate and break up the tumor mass. This tissue will bring about the cicatrization following the necrosis and disappearance of the cancer cells. This infiltrate of vasculo-connective buds is composed principally of young fibroblasts and lymphocytes, surrounding the newly formed capillaries. There are also at times masses of plasma cells, and again one finds at rare intervals cells to which one attributes the function of phagocytosis, i. e., polynuclear leucocytes, neutrophiles, large mononuclears and giant cells.

Disappearance of neoplastic elements and subsequent cicatrization — this is the apparent action of radium.

Looking more closely into the details of the penetrating power of radium we find at a depth of 1 to 6 cm. a region of connective tissue, a region where scar tissue is in the making or is complete — the zone of cicatrization. At a depth of 6 to 9 cm. we note degeneration, not complete, but well under way — the zone of degeneration. Below this comparatively great depth there is evidence of change and pathological unrest, but these disturbances are too delicate to describe.

A very interesting and valuable characteristic of radium is its selective action, a quality inherent in x-rays also. Both of these forms of energy act primarily on the more highly organized animal tissues, and it is the epithelial structures first which feel the influence of both of these rays. Not only is this true, but it can be demonstrated that the most actively growing epithelial cells are influenced even before their more normal brothers. Thus radium can modify cancerous cells and arrest their malignant evolution without producing any changes in the surrounding or adjacent epidermic cells. We base this assertion on positive microscopic facts.

Referring once more to these sections of skin subjected to the enormous dose of 19 cgm. of radium we find that sebaceous and sweat glands lying between the skin and the underlying cancer were hardly affected, while the deeper cancer cells were actually destroyed. This power of selection is all the more striking in this instance when these cells were lying directly in the path of the most intense action of the radium.

Another quality of radium or, more properly speaking, an absence of quality, is its strictly local action. With x-rays observers have noted that after radiation of a given plaque of psoriasis, or of eczema, other affected regions at any distance will clear up. This quality is unhappily not present in radium. Exposure to radium means the amelioration of that particular area treated. This is strictly true, at least in cancer, for neighboring glands remain as before, and metastases are wholly unaffected.

### METHODS OF APPLICATION.

Radium may be applied in the form of tubes when it is intended for cavities, and is spread on cloth, inserted in a glass capsule of any given shape and then surrounded by a given envelope of lead, aluminum or other metal, depending upon the degree of filtration deemed proper.

When not intended for deep sites, radium may be applied on metallic or cloth bases.

The metal base is usually of copper sufficiently thick to be rigid and bearing a roughened face to which the radium varnish may adhere. The form of this base may vary in size and shape, depending upon the region of the body to be treated. These bases should vary in size from 1 to 30 cm. square. Concave bases are useful in the case of eyelids, cheek bones, etc., convex when treating the naso-malar or naso-palpebral regions. When intended for cavities, canals, folds, fistulas, etc., the metal base is usually cylindrical, and, of course, varies in diameter and length. Laminated bases are a useful form to insert behind eyelids, into the nasal cavity, etc.

The cloth bases need no elaborate description. They are simply constructed of cloth of varying size and shape, and are especially useful when large surfaces are to be treated with comparatively weak preparations, the forearm with chronic eczema, for example.

On these metallic or cloth bases we spread a varnish, permeable, solid and resistant, in which we incorporate our radium.

### SCREENS.

In the beginning we stated that the three varieties of radiations possessed different penetrating power. To produce deep reactions we depend for the most part on the gamma rays; but one method of preventing the superficial caustic action of the alpha and of the beta rays is essential, and this is safeguarding of the surface, accomplished by the interposition of certain sub-

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stances which check the alpha and beta rays. There is a tendency, nowadays, however, to employ certain of the beta as well as the gamma rays in therapeutic work. For this purpose one can employ absorbent cotton, rubber, tin, mica, gold, silver, copper, lead or aluminum, but of all of these substances, lead and aluminum are perhaps the best.

Aluminum possesses many advantages as it can be rolled out into sheets as thin as $\frac{1}{100}$ mm., but the most practical thicknesses vary between this extreme and $\frac{8}{100}$ mm. The malleability of lead, on the other hand, is limited for practical uses to $\frac{1}{10}$ mm., and although it has the great superiority of pliability, still its weight, its uncleanliness and its lesser permeability render it less valuable than aluminum for filtration purposes.

Thus far we have considered the application of radium to surfaces of the body or to recesses and canals already existing anatomically, but a still greater scope is given to radium therapy by calling to our aid surgical measures. First, we can ask the surgeon to introduce our applications into more inaccessible parts, the esophagus, the rectum, the bladder, etc., or again we may ask him to make deep incisions in tumors, or to open the thoracic or abdominal walls; and by such procedures the applicability of radium becomes universal. By such surgical interference we have been able to treat large tumor masses of the surface, cancer of the pylorus (gastric fistula), of the uterus, bladder, rectum, larynx, etc.

Many therapeutists have been content to treat their cases from one point of attack only, but an enormous advantage accrues by allowing rays to penetrate simultaneously from several directions, and from the whole surface, and even from the interior as well, if it is thought advisable. This is our method of "cross-fire," a method which materially reduces the time of exposure and greatly enhances the value and enormously increases the scope of radium therapy.

## DISEASES AMENABLE TO RADIUM THERAPY.

### *Carcinoma.*

First in importance from a therapeutic point of view come the various types of carcinoma.

It is well understood that superficial epitheliomata yield in 95% to the action of radium, but from our point of view the surgeon can accomplish this same result in a much shorter space of time by simple excision. There are, however, certain sites on which cancer may grow and from which an excision may produce poor cosmetic results. Such unfavorable seats are represented by the nostrils, the mucous membrane of the nose or mouth, the conjunctivæ, the eyelids and the ears, and here we are much inclined to favor the use of radium, which will cure in these foci as often as the knife, and in accomplishing the parallel result not demand disfiguring and permanent loss of tissue.

If, however, the patient is one who has an ingrained aversion to the knife or to anesthetics, we may rely upon radium to remove vegetating, ulcerating or nodular cutaneous cancers in the great majority of cases. Or if there has been a previous operation and one or more subsequent recurrences, the patient may prefer to try something else besides surgical interference.

In malignant cancer of the rest of the body we must regard radium merely as an adjunct to the surgeon. Operation and excision should always come first, if possible, and a radiologist who ignores this viewpoint renders himself culpable in the eyes of the best modern medical thought. Per contra, the surgeon who is ignorant of, or blind to, the possible therapeutic aid of radium treatment, errs equally toward his patient. Experience shows that radium, applied by the most modern methods, is capable before an operation of delimiting the new growth and revealing more clearly to the surgeon his field of operation. Manifold experience has demonstrated that radium is often capable of holding in check further rapid extension or recurrence even of cancers previously operated upon once or oftener. Experience again has taught us that radium may prove of inestimable value in alleviating pain, and in drying up and deodorizing the foul, ulcerating, inoperable or recurrent cancers of the uterus, bladder, rectum or other parts of the body.

### *Leucoplakia.*

Leucoplakia, recalcitrant to all forms of treatment, may yield to the influence of radium.

### *Hypertrophied Scars.*

Cheloids following sinapisms, burns, operations or ulcers in certain peculiar individuals have usually proved a stumbling block to medical or surgical treatment. The disease known as dermatitis papillaris capillitii (acne keloid) and the disfiguring fibrous bands following scrofuloderma of the neck have likewise been a source of worry to the medical world. Radium seems to have an especially favorable action on these hitherto distressing, often painful and always obstinate affections.

This amenability of cheloidal tissues to radium is due to the fact that the rays can exercise on them a special action which causes them to disappear by simple absorption and by gradual regression without exhibiting the least revulsion or clinically visible inflammation. In order to produce this selective action it is sufficient to use doses which are not strong enough to create surface irritation.

### *Angiomata.*

Vascular naevi, considered from the radium therapeutic point of view, may be divided provisionally into four groups:

*A.* Flat angiomata, superficial and level with the skin.

*B.* Flat angiomata, level with the skin but deeply invading the cutaneous and subcutaneous tissue and mucous membranes.

*C.* More or less raised angiomata with smooth or papillated surface.

*D.* Soft and pulsating angiomata in fluctuat-

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ing areas, and erectile angiomatous tumors situated under the skin or on the mucous membrane.

We all know what a puzzle these varieties of vascular tumors have been in the past from a therapeutic point of view. Electrolysis, caustics, x-rays, knife and $CO_2$ snow have been our chief weapons in the past, but radium offers us to-day a means, and perhaps the best means, of ridding the patient of these disfiguring birthmarks.

The "cross-fire" method of application finds its most accurate and useful employment in the treatment of angiomata. By combining it with weak or medium filtering it considerably increases the intensity of the most deeply penetrating (*surpénétrant*) rays, whilst allowing some action to those of medium penetration.

*Pigmentary Naevi.*

The pigmented moles and birthmarks offer rather an unfavorable target for radium. There is no specific influence exerted in this tissue, that is, there is no selective action, and to accomplish results one must produce inflammatory reactions. But even by this method, which we have learned is fortunately unnecessary in vascular new growths, we may accomplish often striking results. On the other hand, it is best not to treat by radium, hairless, slightly *café au lait*, superficial patches. The resulting chalk-white scars and the frequently resulting telangiectases produce a disfigurement greater than the original lesion.

*Hairy Naevi.*

Radium has a distinct action on the pilo-sebaceous glands, and depilation is not a difficult process by this means. The cosmetic result is good, and we have not to fear the ugly and numerous small scars which follow the destruction of hairs by the x-rays.

*Tuberculosis Cutis.*

The various forms of tuberculosis of the skin may be treated by radium, but the rays have no selective action on tuberculous tissues, and to accomplish results one must employ the emanations as a destructive agent. This treatment requires powerful action, both wide and deep, and long-continued and careful supervision of the resulting scars. Tuberculosis of the mucous membranes can, however, be improved without any perceptible reaction. As to the permanent value of the results in the treatment of tuberculosis, they are inferior in every way to those obtained in carcinoma, angioma and keloid.

*Miscellaneous Diseases.*

In the course of our work we have been led to try the therapeutic power of radium on various recalcitrant diseases, and it is interesting to record varying favorable results in obstinate cases of psoriasis, angiokeratoma, linear ichthyosis, several forms of dyskeratosis and hyperkeratosis, lichen planus, acne rosacea, rhinophyma and certain types of papilloma. We do not wish to consider radium as the first therapeutic choice in all these various diseases, but simply ask you to bear in mind that, when other and more accessible means have failed to produce cure or alleviation, that as a last resort radium may accomplish the desired curative results.

ANALGESIC EFFECTS OF RADIUM.

There can be no doubt of the power of radium to relieve congestion, and this ability and the alterative qualities of the emanations have proved of great service in relieving the pains of certain epitheliomata and carcinomata and of numerous keloids. We are able to record also relief in many cases of neuralgia, including that accompanying and that following herpes zoster, neuritis, gonorrheal and rheumatic arthropathies and iritis, and other experimenters have gained frequent favorable results in the deeper-seated pains of gastritis, tabes dorsalis and sciatica.

Such favorable experiences led us to try the effects of radium in the pruritic diseases of the skin, and as a result we have met with decided success in the relief of pruritus ani, with and without accompanying hemorrhoids, pruritus vulvæ, neuro-dermatitis, lichenification and chronic eczema. We have accomplished these results by the use of rays of weak and medium penetration which seem to have a selective action on pruritus and produce their favorable results without concomitant inflammatory reaction.

Our method of procedure in the treatment of such necessarily large surfaces, as occur in chronic eczema of the arm, for instance, is to apply the radium in the form of a varnish spread on linen. Our technic in combating these disturbances of nervous origin is to employ large apparatus with powerful radio-activity; to make short exposures with intervals between them; to use weak and medium rays in as large numbers as possible; and to avoid superadded inflammation.

[*Note.* — A large part of the evening was devoted to the exhibition of lantern slides illustrating graphically the truth of Dr. Wickham's spoken words, and the audience seemed much impressed by the modesty and sincerity of the speaker. — C. J. White.]

## THE CARE AND MANAGEMENT OF THE TABETIC BLADDER. II. ETIOLOGY.

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(From the Genito-Urinary Out-Patient Department, Massachusetts General Hospital.)

In a previous paper (Boston Medical and Surgical Journal, Dec. 22, 1910) the writer discussed the signs and symptoms of tabes dorsalis. I will now attempt to explain their causation.

At the outset I would say that this is a matter of some difficulty. This is owing to the fact that not only is the anatomy of the urinary mechanism, especially the sphincter apparatus, still in more or less dispute, but the nervous control of the bladder functions is even more a matter of controversy. Such a state of affairs exists in spite

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of innumerable researches, both clinical and experimental.

The muscular structure of the bladder proper is clearly described. It consists of three coats of unstriated muscle: an outer, whose fibers are chiefly longitudinal in direction; a middle, the direction of whose fibers is mainly circular or transverse; and an inner, arranged more or less longitudinally like the outer coat, but with many of the muscle bundles obliquely disposed. The latter is usually incomplete, being found only on the inferior wall, and to some extent on the superior wall. It is not found on the base of the bladder. No sharp line of demarcation exists between the different layers. This is especially true at the neck of the bladder, where all the coats are more or less intermingled. The so-called "detrusor urinæ" is generally considered to consist of the longitudinal fibers, with or without the circular fibers. Thus, broadly speaking, when we say "detrusor," we refer to the bladder muscles as a whole.

Many writers deny the existence of a true internal sphincter of the bladder. Without going into a discussion of the merits of the arguments, I will say at once that, according to the best of evidence, such a sphincter does exist. Further, all are agreed on the presence of an external striated sphincter. The bladder outlet is, therefore, guarded by two sphincters, an inner of smooth muscle, and an outer of striated muscle. The latter is often referred to as the urethral sphincter, or by the familiar names of "cut-off muscle" or "constrictor urethræ," as it divides the membranous from the bulbous urethra.

For an account of these sphincters I shall draw freely from the recent description given by Albarran and Noguès. The smooth muscle fibers of the anterior urethra, scattered throughout its length, join in forming a more or less complete ring at the peno-scrotal angle. This, however, plays no part in urination. These fibers extend upwards in two layers, an inner longitudinal and an outer circular, to surround the membranous and prostatic urethræ (Fig. 1, 9 and 10). At the neck of the bladder there is the internal sphincter of smooth muscle, formed by a continuation of the fibers already described into those of the inner (Fig. 1, 14) and middle coats (Fig. 1, 15) of the detrusor muscle. It is the middle (circular) layer of the latter, thickened at the bladder neck, and continuous with the outer circular coat of smooth muscle fibers surrounding the urethra, which is called the internal or smooth sphincter (Fig. 1, 8). It is the tonicity of this sphincter which prevents involuntary evacuation of urine.

Around the membranous urethra there is found a powerful external sphincter of striated muscle, which prolongs itself upwards like a horseshoe with the opening posterior, along the whole anterior aspect of the prostatic urethra, external to the prostrate itself, up to the bladder (Fig. 1, 7; Fig. 2, *A*, *B*, *C*, *D*, 3). When the prostatic urethra and the neck of the bladder are removed, as in total perineal prostatectomy, incontinence does not occur. This is due solely to the presence of the striated sphincter surrounding the membranous urethra.

In the female, the anatomy of the external sphincter is identical with that of the male, except for the interposition of the prostate in the latter. Owing to this, and to the presence of the vagina, the striated external sphincter of the female completely surrounds the urethra at the bladder neck, while below it is open behind. Its relation to the urethra is thus reversed in the female.

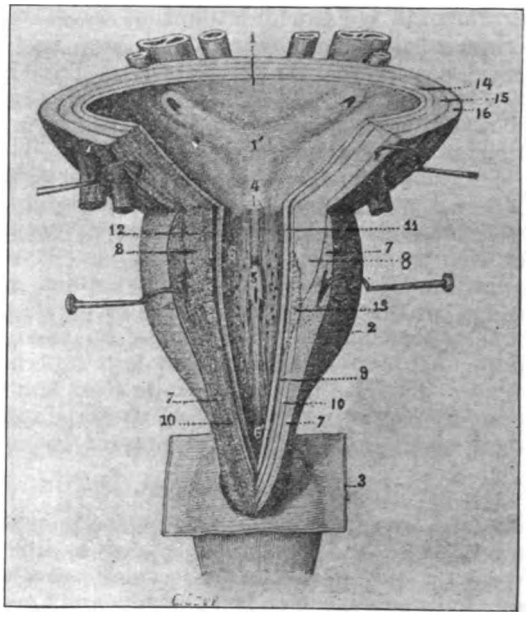


FIG. 1. Longitudinal section showing, 1,1', Bladder and trigone. 2, 13, Prostate. 3, Triangular ligament (inferior layer). 4, Neck of bladder. 5, Verumontanum. 6, 6', Prostatic and membranous urethræ. 7, External striated sphincter. 8, Internal smooth sphincter. 9, Longitudinal smooth fibers of urethra. 10, Circular smooth fibers of urethra. 11, Urethral mucosa. 12, Vascular coat. 14, Internal muscle coat of bladder. 15, Middle muscle coat of bladder. 16, Outer muscle coat of bladder.

The accompanying illustrations, photographed from those in Testut's "Traité d'Anatomie Humaine," show the anatomy of this region very well. Fig. 1, with its explanatory legend, will make clear the appearance of the two sphincters in longitudinal section. It also shows the relation of these sphincters to the three layers of the detrusor muscle. For the appearances of the two sphincters in cross-section the reader is referred to Fig. 2 and its appended description.

It was stated above that the tonicity of the internal sphincter alone prevented involuntary micturition. As evidence of this, Albarran and Noguès recall the fact that when the prostatic urethra is divided, incontinence does not occur, although striated muscle is not found in this location. The tonicity of this sphincter has also been amply demonstrated by the experiments of Courtade and Guyon. They found that even without any nervous excitation the

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internal sphincter will resist a pressure of 12 or 15 cm., occasionally 20 cm., of water.

On the other hand, the resistance of the external sphincter has been shown by these investigators to equal a pressure of from 70 to 100 cm. or more of water. It is thus seen that the presence of two distinct sphincters has been well demonstrated on both anatomical and physiological grounds, and it has also been shown that each sphincter offers its own special resistance to pressure.

In considering the nerve supply of the bladder and sphincters, we find ourselves at once in a bewildering maze of theory and fact. According to Courtade and Guyon, the nerves of the bladder, including the internal sphincter, come from the hypogastric plexus, situated in the loose connective tissue on both sides of the middle part of the rectum. This plexus receives its fibers from two sources, — from the sacral nerves (usually the third and fourth), and from the inferior mesenteric ganglion. The branches from the sacral nerves running to the plexus are two or three in number and are known as the nervi erigentes. They run straight to the plexus without passing through the sympathetic chain. There is also evidence (Guyon, Albarran and Testut) that in the course of these nerves, and even in the detrusor muscle itself, there are numerous ganglia. Their presence is not as yet fully demonstrated, and their action is far from clear. The external sphincter is supplied not only by branches from the hypogastric plexus, but also by a branch from the internal pudic nerve.

The vesical spinal center is said to be on a level with the third and fourth sacral segments of the spinal cord (Frankl-Hochwart), although it is fair to say that its precise location is still in doubt. Another center is found in the medulla. Also, according to Frankl-Hochwart, there is evidence to show that in the brain there is a center in the motor area of the cortex, and a subcortical center in the striate body, and probably also in the optic thalamus. Impulses for urination are believed to travel along the lateral pyramidal tracts.

To quote Albarran and Noguès, "All organic functions are the result of a reflex, and micturition offers no exception to the rule. In every reflex three things are necessary, — sensory nerves, a center and a motor nerve. The sensory nerves transmit the excitation to the center, which transmits it in its turn to the motor nerve."

As regards the action of these nerves and the particular part supposed to be supplied by each, I will give briefly the results of the experiments of Guyon. The latter, working with Courtade in 1895, showed conclusively that the sacral nerves act only on the longitudinal fibers of the bladder, while the hypogastric nerves act only on the circular fibers. As the longitudinal fibers are the ones chiefly concerned in the evacuation of the bladder, they concluded that the act of urination depended almost exclusively on the nerves coming from the medulla by the intervention of the sacral plexus. Further experiment in 1900 led Guyon to conclude that the nervi erigentes were at the same time the sensory and motor nerves of micturition.

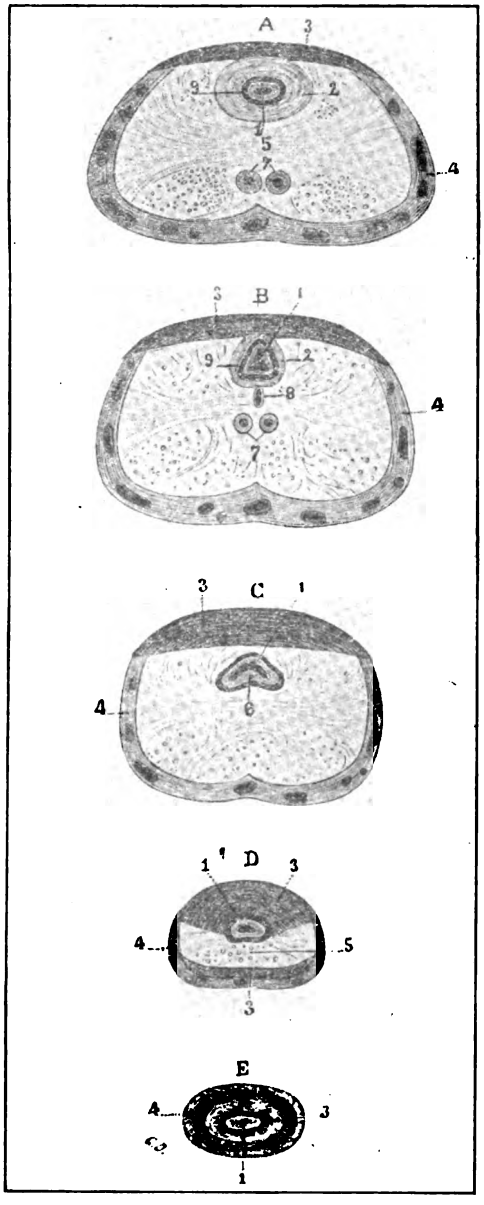


Fig. II. The external urethral sphincter seen in cross sections of the prostate. *A*. 6 mm. below the bladder neck. *B*. 15 mm. below the bladder neck. *C*. 20 mm. below the bladder neck. *D*. At the apex of the prostate. *E*. Behind the membranous urethra. 1, Lumen of urethra. 2, Internal smooth sphincter. 3, Striated external sphincter. 4, Prostatic capsule. 5, Central portion of prostate. 6, Verumontanum. 7, Ejaculatory ducts. 8, Uterus masculinus. 9, Vascular layer of urethra.

Guyon showed, in 1901, that, after section of the nervi erigentes and injection of an irritant (silver nitrate) into the bladder, the latter would still contract and expel a part of its contents. From this he concluded that the tonicity of the bladder muscles was in certain conditions independent of all medullary and even of all extra-

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vesical nervous influence. This is also the opinion of Hirt, Orth, Kocher, Bernheim, Ehrlich and Brieger, Von Zeissl, Henle, Goltz, Bernstein, Dubois and Landois.

The foregoing description of the anatomy, nerve supply and physiology of the urinary mechanism enables us to take up now the consideration of normal micturition. Again referring to Guyon, the theory evolved by him in 1887, with certain minor modifications, seems to be almost unanimously accepted. It is briefly this:

1. Accumulation of urine in the bladder. "The tonicity is very feeble, the extensibility great and the contractility small" (Albarran and Noguès). Intravesical pressure is nil.

2. Slow rise of intravesical pressure to 15 or 20 cm. of water, which we saw was the limit of resistance of the internal sphincter. Meantime the urine is retained in the bladder solely by the tonicity of this sphincter.

3. Rhythmic contractions of the detrusor muscle, each of from forty to sixty seconds' duration (Sherrington), have been going on meantime, increasing in force with the increase of pressure. The resistance of the internal sphincter is overcome and a little urine trickles through it into the posterior urethra.

4. Afferent impulses from the bladder to the lumbo-sacral cord. The desire to urinate is felt, for it has been shown that this desire depends on the irritation of the posterior urethra by the urine.

5. A reflex discharge of impulses by the nerves of the hypogastric plexus (nervi erigentes), resulting in a rise of intravesical pressure to 70 or 100 ccm. of water, and a contraction of the whole bladder wall.

6. The external sphincter yields to this pressure, opens, and urine is forced out by the detrusor contractions, aided perhaps by those of the abdominal muscles.

At this point volition may be called forth, for it is an accepted fact that, up to a certain point, the external sphincter can be contracted so as to check urination, at least temporarily. Lack of this voluntary control of the external sphincter is seen in young infants whose bladders empty themselves as soon as the intravesical pressure overcomes the resistance of the internal sphincter. As development proceeds, volition comes into play, and the child is incontinent only at night. Finally when voluntary control of the external sphincter is fully established, the desire to urinate is under practically complete mastery, as in the adult, and urination can then be started or stopped at will. It is the result of an automatic natural reflex acquired by education.

Howell states that Mosso and Pellacani have shown that the bladder is very sensitive to reflex stimuli. Psychic and sensory stimulation may cause contraction or increased tone of the organ. It is thus subject to constant change in size from reflex stimulation, and the intravesical pressure will then depend not only on the quantity of urine, but also on the tonicity of the detrusor itself. At a certain pressure stimulation of the sensory nerves occurs, and under normal conditions urination ensues. This will explain how, in conditions of emotional excitement, there may occur a strong desire to urinate with only a little fluid in the bladder.

It was seen in my first article that in tabes we have certain signs and symptoms referable to the bladder. The signs are trabeculation, residual urine and anesthesia of the bladder neck. The symptoms are difficult urination, incontinence, dysuria, urgency, frequency, retention and absence of the desire to urinate. These must all be explained, and the explanation must find its basis, in the description already given of the anatomy and physiology of the urinary mechanism.

I, therefore, offer the following explanation of these signs and symptoms. It is largely a theory built up from the evidence at hand. Were there any definite statements of the condition of the nerves controlling the urinary function in tabes, this theory might be placed on a sure pathological basis. So far as I know, the nerves supplying the bladder have never been studied in tabetics.

Painful micturition and irritability of the bladder neck (seen in certain cases) I consider to be a hyperesthesia, analogous to that seen in diseases of the peripheral nerves in other parts of the body.

Frankl-Hochwart, Bierhoff and Böhme think that the urinary disorders seen in spinal cord disease are a question of true, tonic spasm of the external sphincter, and inability of this sphincter to relax, a weakness of detrusor contraction, or possibly of all three factors.

We can eliminate at once an impairment of detrusor contraction, for it has been shown by many able observers that the activity of the detrusor muscle is a pure reflex, independent of all medullary and extravesical nervous influence. If this reflex contractility does not occur, how, then, can we account for the trabeculation, which is found before any symptom or other sign of bladder disturbance, and which we also saw was, primarily at least, a result of increased work on its part? Now the cause of this extra effort is an obstacle to the stream of urine offered by the failure of the external sphincter to open. Normally when the urine is forced against this sphincter, by the contractions of the detrusor muscle, the latter, together with the presence of urine in the posterior urethra, cause a discharge of reflex impulses and the external sphincter opens. In the tabetic this sensation is dulled or absent, as shown not only by the failure of the external sphincter to open, but also by two other factors. One is the complete lack of sensibility of the posterior urethra which enables the cystoscope to be passed without the least sensation on the part of the patient, even without cocainization. The other is the lack of normal desire to urinate, so frequently seen in tabetics. Some patients lack this sensation to such an extent that they empty their bladders only once or twice in the twenty-four hours, and then more from a sense of duty than of necessity.

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When, however, the patient does urinate, the striated sphincter cannot be fully relaxed because of an increased tonicity, or because of paralysis. These factors are difficult to determine because this sphincter is believed to have two kinds of motility, reflex contractibility and voluntary relaxability (Hirt). The brain does not receive in due time the sensation from the bladder. Meantime the climax of the detrusor contractions has been reached, and the tabetic empties his bladder on the downward wave of these contractions (Rehfisch, experimental). Thus the stream is slow and small. As this condition becomes more marked, the patient begins more and more to exert pressure on the bladder by the contraction of the abdominal muscles, thus aiding the action of the detrusor.

But before even the patient has any hint of it, the same difficulty of micturition has been going on in a mild form. The detrusor has been working against an unyielding sphincter and as a result of this extra effort trabeculæ are formed. At first the detrusor can compensate for this obstruction, and, by hypertrophy and hard work, empty the bladder completely. In the course of time this compensation fails, even as heart compensation fails, and we find residual urine. We saw that some patients said they did not feel as if they emptied their bladders. This, then, accounts for this sensation.

To proceed with our theory, nocturnal incontinence occurs from a lack of sensory stimuli from bladder to brain. The bladder fills, contractions occur, the external sphincter is either forced by unusually violent contractions of the detrusor or is reflexly relaxed by them. During the day incontinence occurs less often, or not at all, because with the faculties alert the patient either perceives the desire to urinate and thus contracts his external sphincter voluntarily, or its reflex contraction is unconsciously increased.

Incontinence in tabetics is usually the overflow from a full bladder. It is generally spoken of as ischuria paradoxa. The bladder reaches a certain degree of pressure; this is sufficient to force the external sphincter by the violent detrusor contractions. A little urine escapes, thus lowering the intravesical pressure. Leakage then ceases, until, by the further accumulation of urine, the intravesical pressure is again raised to a point where the external sphincter is once more forced or relaxed and the incontinence recurs.

In somewhat the same way the momentary incontinence occurring with coughing, sneezing or any sudden muscular effort may be explained. The bladder is full, detrusor contractions are going on, the diaphragm becomes fixed, the abdominal muscles contract and compress the bladder. Aided by this pressure the detrusor is able to force a little urine through the external sphincter. This momentarily lowers the intravesical pressure, the brief contraction of the abdominal muscles ceases and leakage stops.

Finally, we must not forget the important factor of incoördination. This occurs in the muscles of locomotion; why not, therefore, in those of urination? It will aid us greatly in explaining wholly or in part the intricate puzzle before us. As Hirt says, "The necessary gradation of dosage of innervation for normal effect is destroyed." The sphincter does not open at the right moment, or with the poor "team work" it closes before the urine has had time to escape. Further evidence of the factor of incoördination is found in the educatability of the muscles concerned in urination, which I shall show later.

Still another factor must be considered in the explanation of these symptoms, namely, urinary infection. It was seen that this occurred, with a concomitant cystitis, in over 50% of cases. We also know that such an infection will cause irritability of the bladder and urgent urination in any individual. Therefore, when the symptoms of bladder infection are superimposed on those caused by the nerve and cord lesions in tabes, we find a doubly complex picture. It may help to explain certain symptoms on the one hand, but *per contra*, it makes the explanation of other symptoms more difficult.

In conclusion, I wish to call attention to the "exhaustion theory" of Edinger, as set forth by Adami and Nicholls. The reparative processes in the specific cells are impaired as a result of some toxin circulating in the system. The neurones which are normally most active, or are most constantly at work, are those which suffer. These are the sensory nerves from the muscles which play an important rôle in the regulation of muscular contraction, and are constantly submitting those stimuli by which we become aware of the condition of our muscular system. The purely sensory nerves which are constantly submitting sensations from the mucous membranes would be likely to suffer and give rise to sensory disturbance. In this way the bladder disturbances may be explained as the result of a destruction of sensory impulses, which that organ is constantly transmitting.

Briefly summarizing the above remarks it can be said that,

1. The bladder is guarded by two sphincters, an internal of smooth fibers, and an external of striated fibers, of which each has its special power of resistance.
2. The function of urination is controlled by branches from the hypogastric plexus (nervi erigentes).
3. The detrusor muscle may contract reflexly without connection with the central nervous system.
4. The urinary disorders of tabes are dependent on, (*a*) a disturbance in the transmission of sensory impulses from bladder, (*b*) incoördination of the muscles of micturition, (*c*) urinary infection.

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## A BIOGRAPHY OF CHARLES SPON, M.D.*

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CHARLES SPON, the son of Mathieu Spon, and Judith Bernard, his wife, was born at Lyons on Dec. 25, 1609. Little is known as to his early education, neither of his life up to 1620, at which time he was sent to his uncle, Charles Spon, at Ulm. His biographers declare that he was particularly fond of Latin poetry, so that his professors already foresaw in him the ingenious author of the "*Myologia heroica carmine expressa.*" His familiarity with the French language, as well as the intellectual midst in which he passed his childhood, undoubtedly contributed to give him his great facility in the study of Latin. However this may be, he preserved during his entire life his great aptitude for this dead language.

He did not remain for any length of time at Ulm, and in 1625 he was in Paris as the disciple of the philosopher, Rodon, whom he left in 1627 to study physics in the Collège de Lizieux. In this institution, which was under the direction of the celebrated Guillaume Mazure, physics and natural sciences were taught under the name of physics. Taking all things into consideration, the preliminary studies in Spon's time were practically the same as they are to-day in the European universities, namely, the study of Latin and letters, philosophy and the natural sciences, only after which could one matriculate in the Faculty of Medicine.

Spon remained at Paris until 1632. He was fortunate enough to study under a coterie of eminent masters. He became especially intimate with Cousinot, who, at that time, had emitted his opinion on the two great medications of the period, namely, diet and bleeding, in the two following works: *Non ergo phlebotamia die critico crisin imminentem remoratur*, Paris, in 4, 1623, and *Ergo dieta plenior securior*, Paris, in 4, 1624. This friendship was of benefit to him inasmuch as when, later on, Cousinot became the first physician to Louis XIV, he obtained letters patent for his former student as quarterly physician to the king. Among other noted men who taught at Paris at this time may be mentioned Pyart, Merlet, Perreau and Charpentier.

* As Guy Patin's letters have long been consulted by both historians and physicians, it was thought that a biography of one of his most constant correspondants, Charles Spon, might be of interest, as little has been published about him. C. G. C.

In 1632 Spon went to Montpellier, where he became on intimate terms with Courtaud, the future adversary of Guy Patin, and with him he admitted the theories of Harvey. After a few months he took the bonnet of doctor and returned to Lyons, but he did not immediately commence to practice there.

His sojourns in Paris and Montpellier revealed to him the rivalry which then existed between the two Faculties, as well as between the theories taught and those who upheld them. This rivalry continued up to the end of the last century and contributed not a little to a wise reserve and a prudent skepticism on the part of the physicians of Lyons. The majority of them, like Spon, had studied at Paris, but, for some unknown reason, most of the degrees were taken at Montpellier, a fact that is made evident when one consults the works published at this time, because one meets, under the name of the author, D.M.M., more frequently than D.M.P.

Although Lyons, at this time, had no university, it possessed, on the other hand, a College of Physicians, whose reputation dated back many years, and although somewhat of a digression, a few words relative to this institution do not seem out of place, and what is to follow regarding it is quoted from Brossette's work entitled, "*Nouvel Éloge de la ville de Lyon,*" which was published in 1711.

"The college of medicine of Lyons is illustrious, not alone because of its antiquity, but also on account of several learned physicians who have belonged to it, among which, without speaking of Abascantus, praised by Galen and Andromacus, one may mention during the latter centuries Gui de Chauliac, Simon de Renodis or of Pavia, François Rabelais, Henri Corneille Agrippa, Michel Nostradamus, Joseph Duchesne, known under the name of Quercetan Jacques Daléchamp, Charles and Jacob Spon and several others."

"Physicians who wished to enter this college must give proof of their capacity by public examination, which is carried out with much exactness and severity, so that it frequently happens that certain candidates are refused, although they may have obtained the degree of M.D. from some university. The physicians of Lyons take the title of professor, because they give public lectures on anatomy, surgery and pharmacy. We have several excellent works on medicine as well as on other subjects composed by the physicians of Lyons belonging to the college."

In point of fact, the College of Physicians is not as ancient as Brossette would lead one to believe, its foundation, in all probability, only dating back to 1540. In 1576 this institution was chartered by Henry III, while its statutes were confirmed in 1577. In order to become a member, it was not alone enough to pass the examinations, but the candidate must have shown that he had practiced for two years in some village in the neighborhood of Lyons. Spon, consequently, submitted to the rule and commenced practice at Pont-de-Vesle, a small town situated about a league from Mâcon.

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In July, 1635, Spon came to Lyons and, on Aug. 7, in the same year, he was admitted to the learned assembly. It was from the time of his entrance into the College of Physicians that Spon commenced his true career. Favored by a large practice, which later on he confided to his son, Jacob, and one of his nephews, Charles, he received in 1645 letters patent as quarterly physician to the king. This distinction, much more honorary than beneficial in its pecuniary aspects, was accorded him, as we have already said, through the efforts of his former master, Cousinot. The care of his patients did not take up so much of his time as to prevent him from giving up several hours each day to his correspondence and to the publication of his many works which saw the light of day at Lyons. As a bibliophile he also exercised considerable influence.

The certificate of the "bourgeosie" which the consulate conferred upon him at the commencement of 1639 also contributed to increase his notoriety and facilitated his relations with the celebrities of his time. Above all should be mentioned the friendship which united him to Guy Patin, and it is by the intermediary of the latter that it has been made possible to penetrate a little into the private life of Spon. Spon's wife was greatly admired by Patin; she belonged to a Protestant family for a long time established at Lyons, her maiden name being Marie Seignoret. One of her brothers was a minister of the Reformed Church. She married Spon in 1643.

From 1645 Spon's life continued without any incident worthy of note. However, his nomination to the title of "vice decanus et procurator inclyti collegii medicorum lugdunensium" should be mentioned. The word "vice" is there merely to save appearances, because, being a Protestant, Spon could not be dean, and he did not feel that he could give up his religion simply for the title in full, but it may be said that he fulfilled his functions in a manner satisfactory to all. There exist several letters addressed to him in which he is given the full title of dean.

In spite of all these honors, the latter years of his existence were passed in sadness. His relatives and friends in Germany were ruined by war, while those of his own religion in France were closely watched. His son returned after a long absence in foreign lands, where he had left both his health and his fortune. All these circumstances undoubtedly contributed to hasten his death, the cause of which is unknown, but in a letter written to Abbé Nicaise, his son, Jacob, refers to the death of his father in the following terms: "He died universally regretted by all the good people and mourned by the poor, to whom he never refused his help. Ill for four months, he only took to his bed in the beginning of January. God preserved his mind up to his last breath."

He died on Feb. 21, 1684, as is shown by the following document: "1684, No. 1797. Charles Spon, Doctor of Medicine, died at Lyons on Feb. 21, 1684, and was buried the 22d of the same month at l'hôpital du pont du Rhône, the ordinary cemetery for those of the reformed religion, in presence of M. M. Brière, Seignoret, and Louis Gérard."

Although this biography is extremely short and undoubtedly far from complete, it is made so simple because only what is authentic of Spon has been given. This distinguished physician certainly played an important part by his writings and correspondence in the medical history of Lyons, as well as by his character and personal qualities.

Although Spon passed his life among savants, he never lost his love for Latin poetry and many admirable verses have been penned by him. In 1636 he commenced to write the maxims found in the Aphorisms of Hippocrates, but having discovered that others before him had had the same end in view, he never published this work. In 1661 he transposed the same author's book on Prognosis into Latin verses, publishing it under the title of "*Sydilla medica.*" Another work which had quite a success is his "*Myologia heroica carmine expressa.*" This work, upon which he worked during his entire life, would probably never have been printed if his son, Jacob, had not given the manuscript to Leclerc and Manget, and these authors, who published the well-known classical work in two volumes, entitled "*Bibliotheca anatomica,*" included this work among others by celebrated men. The work was published at Geneva in 1699.

This poem on the anatomy of the muscles is divided into two parts, the first being an enumeration in hexameters of all the muscles belonging to man, while the details are given in the second part, entitled, "*Musculorum microcosmi origo et inscrito,*" this being divided into twenty-three chapters. In this second part the author adopts the rhythm found in certain of Horace's Odes. As an example, his description of the muscles of the forearm may be given:

Est supinantum radios duplex pars
Longius necnon brevius duplexque
Diga pronantum puta tetragonus
    Atque rotundus.
Musculas pronans radium rotundus
Condyli interni interiore ab ora
Brachii surgit mediaque radique
    Parte quiescit.

Another work by Spon entitled "*Recueil de constitutions médicales*" contained his experience in the practice of medicine, but the manuscript, which had not been published up to the time of his death, fell into the hands of his son, Jacob, and was lost along with the letters comprising the correspondence of both the father and son.

Spon rendered great service to science by giving his attention to the publication of medical works printed at Lyons, particularly Sennert's letters, the observations of Schenkius, and, above all, Cardano's works. Schenkius, who was professor at Freiburg, and died in 1598, had published his works in the first place at Basle and at Freiburg, respectively, in 1584 and 1597, the whole comprising seven volumes. They were again published

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at Frankfurt in 1600 and at Lyons in 1644, under the care of Spon.

As has already been said, he also edited Sennert's work. This writer enjoyed a much greater renown than Schenkius. He was born at Breslau in 1572, receiving the degree of doctor at Wittemberg in 1602, and later became professor of medicine at this university. He is supposed to have died in 1637 from the plague. His writings are of particular interest because he was the first to introduce chemistry into medical studies and endeavored to conciliate the principles of Paracelsus with those of Galen. The third author whose works were published by Spon was Cardano. The Lyons' edition, published by Spon, is dated 1663, and has for title: "*Cardani Hieronymi Opera omnia, cura Caroli Sponii Lugduni sumptibus Joannis Antonii Huguetan et Marci Antonii.*"

Lastly is to be mentioned a volume entitled: "*Appendice chimique à la pharmacopée de Lyon.*" This work, which was published under the auspices of the College of Physicians, in 1628, bears no author's name, but a second edition appeared in 1674 under the following title: "*Pharmacopea Lugdunensis reformata mandato et cura inclyti collegii medicorum Lugdunensium Lugduni Gallorum MDCLXXIV, Ejusdem collegii sumptibus excusa, typis Jacobi Faeton.*"

The last section of this pharmacopoea is, "*Appendix de medicamentis chymicis,*" and this appendix was written by Spon himself. This appendix was also printed in the first edition, but it consisted of only three short chapters. The fourth chapter, *De calcibus*, etc., was entirely due to Charles Spon.

To give a description of Charles Spon's correspondence and the influence that it had upon medical science of the time would be far too long, although full of interest.

In closing, however, one name among Spon's correspondents which has become almost inseparable with his should be mentioned, viz., Guy Patin. It is most curious to see the physician of Lyons united in friendship with two men who passed their lives in opposing each other as did Courtaud and Patin. The latter, with a mind filled with preconceived ideas and an open enemy to all progress, would hardly appear the sort to be a confidant of a man as liberal as was Charles Spon. Chance had brought them together in Paris and they continued their relations formed there by an active correspondence. The letters of Charles Spon have unfortunately been lost, but Patin's have luckily been preserved. From 1642 to 1664 the latter did not cease to write his friend.

Courtaud was born at Montpellier and received the degree of doctor in 1611. Being the nephew of Heroard, chief physician to Louis XIII, he received letters patent as quarterly physician to the king, but for reasons which need no discussion here he was obliged to sell his position and establish himself at Montpellier. Renowned for his polemics, Courtaud should more particularly be known for the service that he rendered in the teaching of medicine at Lyons, because it was through him that Charles Spon received his knowledge of the works which appeared at the time and was informed of their good qualities and defects. Courtaud was extremely learned and, consequently, was well placed to instruct Spon in the value of many medical works.

## Clinical Department.

### A CASE RESEMBLING MYOTONIA OCCURRING IN AN ADULT, DUE TO THE TRICHINA SPIRALIS, WITH THE PATHOLOGICAL FINDINGS IN THE MUSCLES.*

BY ISADOR H. CORIAT, M.D., BOSTON.

THIS case is reported rather fully because of the occurrence in an adult of a symptom-complex which is usually found only in childhood, of certain difficulties in diagnosis and finally of the interesting histological findings.

The patient, a healthy man seventy-one years of age, was referred to me by Dr. Metzger, of Lynn, Mass., for a peculiar stiffness of the leg muscles which interfered with his ability to walk. It is stated that the father of the patient, who was a blacksmith, developed an atrophy of the arm and hand muscles following a period of overwork at his trade, the condition persisting until his death, at the age of seventy-two. This localization of the muscular atrophy is an intersting confirmation of Edinger's theory of over-exertion. It appears, however, that the muscular atrophy in the father was a mere coincidence, as the type of disorder found in the son was distinctly non-hereditary, a pure myopathy, due to a specific infection and not to any atrophy of the motor cells of the spinal cord. Eight years before coming under observation there was a history of a severe gastro-intestinal attack. Shortly afterwards a stiffness was noticed in the right leg, followed by a weakness of the muscles of the right foot. Finally, the left leg and foot were likewise affected. There was usually no difficulty in starting to walk, but after a short time, or in excessive fatigue, there arose a sensation of tightening in the calf muscles which made further walking impossible. A short rest, however, restored the contractile ability of the muscles. In bicycle riding the same difficulty took place; he was able to go only a short distance, when further pedalling became impossible.

The neurological examination showed the following. The calf muscles were thin and flabby, the measurement for the right calf being 29 cm., for the left calf 30 cm. Occasional fibrillary twitchings were noticed in these atrophied muscles. The foot could be extended and flexed rapidly and easily, but after a few minutes these movements became slower and more difficult and then almost ceased, the calf muscles at the same time becoming hard and rigid. After walking a few steps the gait became stiff and the phenomenon of rigidity of the calf muscles was again found to take place. This rigidity disappeared in about a minute after the contractions had ceased. There was no difficulty in starting to walk or in the initiative voluntary movements. He could also arise quickly from a sitting posture. There was no overdevelopment or hypertrophy of the musculature. The bladder and rectum, the muscular movements of the upper extremity, the facial muscles,

* Read before the Mt. Sinai Hospital Clinical Society, Oct. 13, 1910.

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the muscles of mastication and the ocular muscles were unaffected. It will be noticed that the muscular rigidity took place only after a number of muscular contractions and not at the beginning of voluntary movements, thus partially differentiating the condition from myotonia congenita (Thomsen's disease).

It was not a true intention rigidity and, therefore, this portion of the symptom-complex was only partially allied to a genuine myotonia. Further clinical investigation, however, brought out a more marked resemblance, particularly concerning the nature of the electrical reactions and the muscular contractions after mechanical stimulation.

On striking the calf muscles briskly with a percussion hammer, the muscular contractions were seen to spread slowly in waves from bundle to bundle. According to Jensen, who made myographic studies on the nature of this phenomenon, the myotonic muscles very slowly relax, the process consuming more than eight seconds, while the relaxation of normal muscles consumes only about 0.2 of a second. All the calf muscles (gastrocnemei, solei, peronei and anterior tibial group) reacted only to a strong faradic current. The contractions, however, were slow and sluggish, and after removal of the electrodes a long undulating contraction, spreading from one muscle bundle to another, remained for several seconds (Erb's myotonic reaction). Electrical stimulation of the nerve trunks in the popliteal space produced the same slow contraction waves in the calf muscles.

The knee-jerks were somewhat exaggerated, the plantar reflex normal and brisk, there was no ankle clonus and no Babinski. The Achilles jerks were absent. The pupils and ocular movements were normal. There was no nystagmus. Sensory disturbances were absent. An examination of the blood showed the percentage of eosinophiles to be normal.

Under local anesthesia a small piece of muscle was removed from each calf. The pieces of excised muscle were hardened in Zenker, imbedded in paraffine and stained with the connective tissue stain, hematoxylin-eosin and osmic acid. With the latter, no fatty degeneration of any of the muscle fibers could be made out. The connective tissue stain revealed encapsulated larvæ of the trichina spiralis.

The most interesting histological findings were in the muscle fibers. In my study of the muscles I compared the condition with some of the most recent advances in muscle histology, particularly the work of Meigs. These muscle fibers were in all stages of progressive degeneration. They seemed to fall into several groups: A few normal fibers, hypertrophied fibers with some increase of nuclei, progressive increase of nuclei with diminution of sarcoplasm and finally only a sarcolemma sheath enclosing a mass of nuclei. With a high power these latter were seen to be round mononuclear cells, containing a small nucleus and a large amount of protoplasm.

In these cells, mitotic figures could be seen. Because of their infiltrating and invading character, being found in largest number where the destruction of the sarcostyles was the greatest or where only a sarcolemma sheath remained, these cells were probably of the nature of scavenger cells (phagocytes), myophages they might appropriately be called. These cells seem to be different from the normal, spindle-shaped muscle nuclei, as these latter lie directly and singly beneath the sarcolemma sheath, whereas the scavenger cells were scattered in clumps all over the muscle fibers. In some of the muscle fibers which were cut transversely nothing could be seen but a hollow ring with a few fibers at the periphery. In the hypertrophied fibers the sarcostyles were found to be thickened and swollen, whereas in the atrophied fibers the sarcostyles were thin and very indistinct. Within the sarcolemma sheaths, masses of broken up sarcostyles were found, or sometimes the sarcolemma sheath was empty except for masses of scavenger cells. With a high power and a dim light the cross striations could be clearly distinguished even on the degenerated and atrophied sarcostyles, while in the hypertrophied sarcostyles the cross striations had entirely disappeared, the fibrils were swollen and took a faint, diffuse stain, resembling the condition seen in acute and subacute myositis. Occasionally other cells were seen, sausage-shaped, filled with dark granules and containing two or three nuclei. These were probably mononuclear cells in a process of rapid division. Eosinophile cells were absent, but these seem to have been found only in the acute and subacute conditions and not in the chronic stages of the disease.

The pathogenetic agent in the condition and the cause of the pathological findings in the muscles was undoubtedly the trichina spiralis. It is well known that the encysted larvæ of the parasite may remain in the muscle for years. Our case showed the typical gastro-intestinal disturbances as a premonitory symptom of the disease, and closely on this, the peculiar muscular stiffness followed, resembling a genuine myotonia.

The trichina spiralis occurs in three stages: The adult, which is found only in the intestine or its lymphatic spaces; the embryo, which wanders from the intestine (where the females deposit their young) either through the lymph or blood to the striated muscles and, finally, after the embryo enters the muscle fibers, it develops into an encysted larva. When muscular invasion occurs, the parasite then excites its irritative action and causes the fiber degeneration and nuclear proliferation. Not only may the skeletal muscles become involved, but the heart muscles as well, producing an acute myocarditis, the so-called trichinosis heart.

Other reported cases of muscular invasion by the trichina spiralis, when the muscles were examined, have shown similar findings. Histological studies of the muscle changes in chronic trichinosis are rather rare, however, as compared with the investigations on the acute type.

Even in Stäubli's extensive monograph on trichinosis, there is no description of the muscle findings in the chronic or quiescent stage of the disease. Neither has the literature furnished any description of the resemblance of the muscle phenomena in quiescent trichinosis to certain symptoms of the pure myopathies, such as myotonia.

Lorenz has reported three cases in various stages of the disease. He found, in the acute and subacute condition, cellular infiltration and a marked increase of sarcolemma nuclei, the formation of vacuoles, diffuse muscle degeneration, sometimes fatty changes and eosinophile cells. There was no fragmentation of the sarcostyles. In what he terms obsolete or quiescent trichinosis there was also found an increase of the sarcolemma cells, atrophy and degeneration of the muscle fibers and, in addition, granulation of the protoplasm and fragmentation of the fibrillæ.

In acute experimental trichinosis, Soudakę-

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witch found an increase of nuclei in the muscle bundles, while the sarcostyles retained their striated structure. If the process was allowed to progress, however, it was found that the muscle striations disappeared, while the number of nuclei increased. He refers to this increase of nuclei as muscular phagocytosis.

Ehrhardt has also studied the histological findings in experimental trichinosis. He found marked changes in the nature of the protoplasm, as shown by the microchemical reactions, fatty, granular and waxy degeneration, swelling of the fibers and an enormous increase of sarcolemma nuclei, in some cases with mitotic figures. The voluntary muscles of man showed less fatty degeneration and less mitoses of the nuclei than those of rabbits.

Brown studied four acute cases of trichinosis, and in addition to the marked eosinophilia in the blood he described the following changes in the muscles. There was marked fragmentation of the muscle fibers, which may break up in the long axis of the fibers into separate fibrillæ or into bunches of fibrillæ. Sometimes the fragmentation was transverse, thus splitting the muscle into distinct disks. Whether the fragmentation took place at the membrane of Krause or at the plane of Henson could not be determined. There was slight thickening of the sarcolemma and marked nuclear proliferation even where no parasites were seen. There were many polymorphonuclear cells between and within the fibers, and many cells whose protoplasm showed a marked affinity for the eosin stain. While these cells were probably phagocytic in nature, yet no ingestion of rod-shaped bits or disks could be seen.

Without again going into detail, it will be noticed that the muscle findings of the various observers corresponded almost exactly with the results of the examination in our case. We refer particularly to the degenerative changes in the fibers, the presence of large numbers of foreign cells, probably phagocytic in nature, and the marked increase of the sarcolemma nuclei. The nuclear degeneration and the cellular proliferation is undoubtedly caused by invasion with the larva of the trichina spiralis, the latter being a pathological process analogous to the lymphoid and giant-cell formation of the tubercle bacillus. In fact, many cells in our case were sausage shaped and showed many nuclei, resembling the giant cells in tubercular processes.

This infiltration and increase of nuclei has also been found in other pathological conditions where the muscles were affected. The condition is the same either in the pure myopathies or where the muscular changes are due to trophic influences from the central nervous system.

In subacute polymyositis, granular degeneration of the muscle fibers with great increase of nuclei has been found. This increase of nuclei and muscular degeneration has also been pointed out as occurring in amyotonia congenita or Oppenheim's disease (Collier, Holmes, Wilson, Skoog), in some cases of progressive neural muscular atrophy (Cassirer and Maas), and in Thomsen's disease (Schiefferdecker and Schultze). In fact, Dejerine and Sottas claim that the first phenomena of Thomsen's disease is a hyperplasia of the nuclei, probably due to a disease of the sarcoplasm. The mixture of atrophied and hypertrophied muscle fibers in our case is of interest as many of the pure myotonias have also shown a transition into muscular atrophy. In fact, such cases have been reported by Frohman and Hoffman in certain infantile hereditary forms of progressive muscular atrophy. It would seem from this fact alone that we can no longer interpret the myotonias as diseases of metabolism caused by toxic products, from changes in the parathyroid glands or from kreatinin poisoning, as Bechterew and Lundborg have done. They are rather pure myopathies due in one case to a specific irritative agent like the trichina spiralis, in the other to an unknown pathogenesis probably of a trophic nature, which acts on the primitive sarcostyles of the muscle tissue. In conclusion I wish to thank Dr. Leary, of the Pathological Department of Tufts College Medical School, for the preparation and staining of the specimens, and also for many valuable hints on the histopathology of muscle fiber.

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# Reports of Societies.

## AMERICAN LARYNGOLOGICAL ASSOCIATION.

THIRTY-SECOND ANNUAL MEETING, HELD IN WASHINGTON, D. C., MAY 3, 4, 5, 1910.

JAMES E. LOGAN, M.D., *President.*
JAMES E. NEWCOMB, *Secretary.*

(Continued from No. 25, p. 958.)

### THE TUBERCULIN TREATMENT OF PULMONARY TUBERCULOSIS IN OFFICE AND DISPENSARY PRACTICE.

JAMES ALEXANDER MILLER, A.M., M.D., of New York.

Tuberculin is now generally regarded by physicians who have had sufficient experience with it as a valuable aid in the treatment of pulmonary tuberculosis if used

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in connection with other accepted methods. The method of administration is the so-called "clinical method" of producing tuberculin tolerance, the aim being to gradually accustom the patient to increasing doses of tuberculin, beginning with a very small amount easily tolerated and proceeding over a long period of time to large doses without the production of any reaction.

There is no material advantage in any one of the usual preparations of tuberculin, the active principle apparently being the same in each.

In selecting suitable cases for this treatment in the dispensary, it should be borne in mind that for incipient cases sanatorium treatment is always advisable and hospital treatment for advanced cases.

Tuberculin finds its widest usefulness in the intermediate cases for whom there is no adequate institutional provision. As the treatment is one of active immunization, it requires an ability to respond on the part of the patient, so that it should never be used in cases where the general condition is very poor or where there is fever.

A preliminary rest treatment, in order to build up the general condition of the patient, is almost always desirable, and throughout the treatment every effort must be made to carry out the general principles of the hygienic and dietetic treatment. Injections are given twice a week on an average, and the beginning dose varies from 1-100,000 mgm. to 1-10,000 mgm., and the progression of dosage depends on the clinical symptoms. The highest dose to be given depends upon the needs of the patient, in many cases reaching as high as 1 gm., with many others getting as good results from 1 mgm.

The time element is important, at least six months and often eighteen months being necessary to complete the course of treatment.

Often repeated courses of tuberculin are necessary in chronic cases. The results obtained in seventy cases treated at least three months in dispensary and private practice in New York City showed that 51.4% were either cured or their disease arrested, and that although these cases were treated over a period of five years, 58.5% of them are now well and in active life. This is especially suggestive as 87.2% were advanced cases.

With sufficient experience and proper precaution tuberculin treatment can be carried on quite as satisfactorily in the dispensary as in the sanatorium.

H. M. King, M.D. Results seem to justify further efforts in this direction.

Dr. Solis Cohen, Philadelphia, said that he had a very prolonged experience with tuberculin, and gave the first injection of tuberculin before his class at the Jefferson Medical College in Philadelphia in the early eighties, upon a patient with advanced tuberculosis of the larynx. Ten years ago the man was well and was a successful ranchman in Wyoming, but he has not heard from him since. Another patient treated fifteen or sixteen years ago for ulcer of the larynx had his disease arrested after several months of treatment, and two years later had his life insured in the Mutual Life Insurance Company of New York for $100,000. Other cases are still living at different periods of five to fifteen years or more, and doing well. He generally used the old tuberculin of Koch, beginning with minute doses, generally increasing them, as described by the last two speakers, and studying the patient rather than the disease. When he studied medicine some fifty-five years ago, it was the custom to apply fly blisters as near as possible over the site of the lesion of phthisis. Nothing was known of the bacillus tuberculosis at that time, but many of these cases improved, and since the tuberculin and serum treatment have been applied he has thought that possibly the absorption of some of the serum raised by those blisters was beneficial in the same manner as the serum when injected under the skin; acting on this principle it has been his custom with many patients to blister the chest below the clavicle, taking care that the blister shall not burst, so that the patient's own serum may be absorbed on the same principle as the autogenous methods, and he wished to give testimony as to the advantage of this method in properly selected cases and under proper precautions.

Dr. Bowditch, Boston, ranked himself in the class spoken of by Dr. Miller who tried it immediately after it was given to the public, and then abandoned it, being impressed by the statement that there was danger of causing disseminated tuberculosis. In recent years, feeling that possibly he might be withholding the treatment from some who might be benefited, he, in association with Dr. Griffin, applied the treatment on some patients, who were not progressing under the usual treatment, and the results were so startling that now in addition to beginning on patients who were not doing well under dietetic and hygienic treatment, he begins on the incipient cases also. At present he is greatly impressed with the value of tuberculin.

Dr. Griffin, Sharon, Mass., cited two cases in which Dr. Bowditch and himself had used tuberculin treatment, and briefly reported on twenty-eight cases which have had this treatment at Sharon and have now been discharged for more than a year. Of these twenty-eight patients, six have died, — two were really too far advanced to warrant advising it, but took it at their own request; four others were advanced cases and were treated as a forlorn chance, and four others are not doing particularly well. This leaves eighteen out of the twenty-eight cases which are doing well, which seems to be a comparatively good record, especially when it is considered that all were more than incipient cases. It is well known that the tuberculin will do no harm, and it frequently will do good.

Dr. Nagle, Boston, did not wish to be considered too enthusiastic about vaccine therapy, but believes that it is a valuable adjunct in treatment, and laid emphasis on the importance of the proper preparation of the vaccines and the proper method of giving them.

Dr. Minor, Asheville, N. C., considers tuberculin valuable when used selectively, but all cases do not do well on it, and some cases with the greatest care are unable to take it. He advised great care in the selection of cases, and warned against its dangers when used promiscuously.

Dr. Johnson, Paterson, N. J., said that he would judge that tuberculin has been successful in a number of cases, but the important consideration to the otologist is what can be done with the autogenous or stock serum for the destruction of bacterial elements which enter into ear diseases. Few of the cases which have come under his observation have been successful. While not wishing to deprecate the value of experiments in this direction, he is still waiting and hoping for reports of results which will seem to make it desirable for these agents to be used more generally.

Dr. Casselberry, Chicago, was impressed with Dr. King's statements in regard to the pronounced favorable effects of tuberculin on laryngeal conditions in pulmonary tuberculosis; if in tuberculin we have a remedy which will have in any considerable percentage of cases such effects as reported by Dr. King, a great advance has been made. He was also impressed with Dr. King's statement that in cases where he got very pronounced reactions from a larger dose than was intended, the effect was good. He had observed this himself in making the tuberculin test when it was given for the purpose of producing a general reaction —

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weeks and even months afterward there had been marked improvement in the larynx. He had observed this, but did not trust to his own observation, and gave the credit to other circumstances. Dr. King has attributed the improvement to tuberculin, and there seems reason to believe he is correct. If the men who treat large numbers of pulmonary cases would always take note of the conditions of the larynx and the effects on conditions there produced by tuberculin treatment, much benefit would doubtless result.

DR. DUNN, Asheville, N. C., said that it is just such good conservative papers as those presented which help. The tuberculin cause has been more damaged by optimisms than by anything else. He always examines the larynx, and has been particularly impresed with the improvement taking place in distinct laryngeal involvement; this is not so striking in advanced cases where there are marked destructive changes. He has watched for the reactions, and has in so many instances seen the beginning of the improvement in the laryngeal reaction that he is convinced of its association with the reaction. He has used various forms of tuberculin, but the immediate results have been practically the same with all. He is very conservative in regard to the value of tuberculin and does not consider that sufficient time has elapsed to form a positive opinion regarding it, but at present he considers it a more or less valuable adjunct to treatment.

DR. I. H. HANCE, Lakewood, N. J., cited an abstract from an article written by a Frenchman which was in line with what had been said about auto-inocculation — in treating pleuritic effusions he withdrew some of the serum and re-inoculated the patient, and had treated five or six cases in this way. This seemed to be in accord with what Dr. Cohen had said about leaving the serum under the blister for reabsorption and auto-inoculation that way.

### XII. TRANSPLANTATION OF A RIB CARTILAGE INTO THE NOSE IN A CASE OF NASAL DEFORMITY.

D. CROSBY GREENE, JR., M.D. Read by title.

In the correction of deformities of the nose, characterized by sinking and flattening of the bridge, there is a useful field for the transplantation of cartilage. It has been demonstrated that unless cartilage is transplanted with its perichondrium, it does not grow in the locality, but becomes gradually absorbed. For this reason the material derived from submucous resection of the septum is not usable. Costal cartilage may readily be obtained without injury to the individual, and was used in the case reported. A young man of twenty-two had received an injury in football eight years previously. The nose was struck by a blow across the bridge, which drove in both nasal bones, flattening them. This was followed by an abscess of the septum, with almost complete destruction of the cartilaginous septum. The result was a symmetrically flattened broad nose, with a membranous septum anteriorly. At operation, a chamber for the introduction of the cartilage was prepared by an intranasal incision of the mucous membrane of the septum, parallel to and just behind the muco-cutaneous junction. Through this incision the layers of membranous septum were separated, both in front and behind. The chamber thus formed was enlarged backward and upward over the nasal bones. Simultaneously with this operation, the cartilages of the eighth and ninth ribs were exposed by an oblique incision over their distal ends, and carefully freed from their attachments of muscle and fascia. The size and shape of the piece of cartilage to be used were determined by first fitting into the chamber made in the nose a piece of sterilized leather. This leather was trimmed to the desired shape, and then a piece of rib to match it was removed and placed in the nasal chamber. The wound was closed with a single suture. Four months after operation there was no evident tendency of the cartilage to become absorbed.

No discussion.

### XIII. SYPHILITIC STENOSIS OF THE OROPHARYNX.

By J. M. INGERSOLL, M.D., Cleveland, Ohio.

The difficulty in preventing the contraction of syphilitic scar tissue is well known. Syphilitic stenosis of the oropharynx tends to interfere with respiration and deglutition.

In the case reported by the author, the syphilitic scar tissue extended across the oropharynx, uniting the lateral and posterior walls of the oropharynx with the tongue. About in the center of this scar tissue there was an opening ½ cm. in diameter through which the inspired air and food must pass. The opening was so small that it was impossible to secure a view below it. The breathing was labored. The patient had been losing flesh constantly and was quite weak and emaciated.

Incisions were made through the scar tissue at various times and bougies and specially prepared metal tubes were given to the patient to use in preventing the contraction of the scar tissue. The patient, however, failed to carry out the dilatation regularly and there was a constant tendency for the original condition to return.

Similar cases reported by Dr. B. F. Curtis, Dr. G. A. Leland, Dr. C. K. Briddon and Dr. W. H. Battle were cited.

A bibliography was also given.

DR. JOSEPH H. BRYAN, Washington, said that these are the most troublesome cases that the rhinologist has to deal with and that he has never had a successful case; every one has had recurrence of the adhesions, and it seems impossible to give the patients any complete relief from their troubles. He has had cases go along for six or eight months, possibly a year, and still contraction has taken place and the conditions have been almost as bad as they were originally. He had tried the flap operation, but the result was not very satisfactory.

### XIV. REPORT OF THREE CASES OF LYMPHOSARCOMA OF THE NASOPHARYNX AND TONSILS, WITH RESULTS OF OPERATIVE AND MEDICINAL TREATMENT.

By CLEMENT F. THIESEN, M.D., Albany, N. Y. Read by title.

In one of the three cases, that of a boy aged fourteen years, the growth was primary in the nasopharynx. Diagnosis confirmed by laboratory examination of pieces removed under cocaine. Nasopharyngeal growth removed under ether. No recurrence in nasopharynx, but soon after operation growth of left tonsil developed with a large rapidly growing metastasis in left side of neck. Boy died several months after operation.

In second case, a man aged forty-eight years, the growth was apparently confined to the left tonsil, a large nodular mass. Laboratory diagnosis — lymphosarcoma.

Operation under cocaine anesthesia; growth including the tonsil dissected out. Not much bleeding. No return in site of operation, but growth in larynx six weeks after operation with great dyspnea. Tracheotomy performed. Patient now in good condition.

Growth in larynx not increasing in size. Full doses of arsenic internally apparently having good effect.

In the third case, the sarcoma was confined to the right tonsil. Patient, a man aged thirty-two years.

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Laboratory diagnosis — lymphosarcoma. Growth including tonsil dissected out. Patient in good condition at present writing. Apparently no involvement of glands of neck.

XV. OBSERVATIONS OF THE VARIETY OF GERMS PRESENT IN WOUNDS FOLLOWING OPERATIONS ON THE FAUCIAL TONSILS.

By Alexander McCoy, M.D., Philadelphia. Read by title.

In order to see at first hand if there were any predominating organisms in the pseudo-membranes which form over the exposed surfaces after tonsillotomies and tonsillectomies, cultures and smears were made from these membranes in twenty cases operated upon in the last few weeks. These cases were operated upon in groups of from three to six. Many of them had been associated in the same ward for two or three days before operation. The others were brought to the hospital the morning of the day that they were to be operated upon. They were kept in the hospital on an average of about five days. The cultures were taken by drying the area to be cultured with a sterile cotton swab; then, quickly applying a second sterile cotton swab, turning it once or twice and pushing up part of the pseudo-membrane, this was cultured on Loeffler's blood serum media and incubated twenty-four hours. Smears were immediately made from this same swab. In a number of the cases cultures and smears were made from both sides of the pharynx. Five of the cases were cultured on the first day after operation, nine on the second day, four on the third day and two on the fourth day. The smears all showed the usual polymorphonuclear and epithelial cells. The bacteria were numerous and very variable. In all the smears there were cocci. In two spirochetes and long thin fusiform bacteria were seen, and in two irregular bacteria with beadings resembling polar bodies were present. There were in most all a number of the varied forms of mouth bacteria not in such numbers as to have any definite significance. The cultures showed nothing significant between those taken early and those taken on the third and fourth days, and there was nothing definite between those from the children that had played together for a few days previous to operation and those who were not in a ward together until after operation. Two of the cultures were mostly streptococci. Nine were mostly streptococci and staphylococci. One showed the predominating organism to be a short stout spore-bearing bacillus. In another the predominating organism was a short stout unidentified bacillus singly and in pairs. In nine of the cultures there was no predominating organism, but colonies of cocci and bacilli common in the mouth. In four of these, however, a large diplococcus was found, and in two, irregular beaded bacilli. In one culture there were proteolytic colonies which digested the blood serum. In none of the cultures were Klebs-Loeffler bacilli found. From the cultures of these twenty cases we conclude that there is no predominating organism in the pseudo-membranes; that the ordinary mouth bacteria are to be found in all of them in variable quantities, the cocci being most numerous, and that the cultures will more often show staphylococci and streptococci, probably due in part at least to their greater hardiness on artificial media.

XVI. REPORT OF A FATAL CASE OF ASPHYXIA DUE TO PRESSURE ON THE TRACHEA AND BROUGHT ABOUT BY A TUBERCULOUS MEDIASTINAL GLAND.

Cornelius G. Coakley, M.D.

Dr. D. Bryson Delavan, New York, cited his experience with a similar case. The patient was a beautiful well-nourished child who had been seized with so severe a dyspnea that tracheotomy had to be performed. The tracheotomy had not been very well done and had not succeeded in relieving the breathing, which was possibly excusable under the conditions under which it had been performed. Under anesthesia a very careful examination was made, and an obstruction was found in the middle part of the trachea. There had been severe spasm of the larynx in addition to the pressure on the trachea. Of course the tracheotomy relieved the laryngeal obstruction. The child had a high temperature following the operation and died eight days later. Autopsy showed a tuberculous lymph node pressing on the trachea.

Dr. Chevalier Jackson, Pittsburg, said that the case was an exceedingly interesting one. We seem to be gradually eliminating, one after another, the things which used to be classified as status lymphaticus. These conditions are now being analyzed, and so work as Dr. Coakley had done is going to discover their causes. He also cited the case of a child in which a tracheotomy had been unsuccessful, and in which autopsy showed that both lungs were tubercular. In this instance a lymph gland had broken down and burst into the bronchus. It was a very unusual case. With such men as Coakley and Halsey working along these lines these cases will be differentiated.

Dr. Ingals, Chicago, said that the case recalled to his mind one which, although not exactly apropos, not being tubercular, yet had many of the symptoms of Dr. Coakley's case. The child was brought to the city with an almost typical history of foreign body in the bronchi, a sudden paroxysm of cough coming on at irregular intervals, the child almost suffocating at times. Nothing was shown by the x-ray. The child was placed on the table and ether started with a view to bronchoscopy, but the breathing stopped and the child could not be resuscitated. Later a post-mortem was secured, and a large thymus was found, part of which was adherent very low down, which was evidently the cause of the trouble.

Dr. Solis Cohen, Philadelphia, reported a case which had been referred to him, after examination by another laryngologist, who reported it to be a tumor lymphaticus. He saw a tumor, but as the child was not suffering much at the time, he gave it a placebo and made arrangements for more complete examination the next day, but it was seized with another attack and died. He asked Dr. Coakley to describe the character of the pressure. He had seen some cases of thymus gland pressure where as soon as incision was made the relief was so great that the dyspnea ceased.

Dr. B. W. Shurley, Detroit, said that the case interested him from another point of view. Before the days of bronchoscopy it occasionally happened that one saw cases of apparent laryngeal dyspnea with a long series of intubations where the tube was passed with absolutely no relief. All are familiar with such cases, yet the textbooks scarcely mention the presence of mediastinal disease in children. The presence of lymph nodes can sometimes be determined, but it is exceedingly difficult. Some diagnosticians can classify these cases in children quite frequently, but he himself had not been able to do so.

Dr. Price-Brown, Toronto, asked if this could not be applied to adults as well, and cited a case in which he had been called upon to treat a man who had suffered from difficult respiration for some time. Intubation gave no relief; tracheotomy gave relief for some hours, but then he died. There was no pressure, no diagnosis of any disease, yet the result was fatal.

Dr. Coakley, closing the discussion, said that he had been much interested in what Dr. Jackson had

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said about status lymphaticus. He had always questioned why these cases of sudden death should occur where no pathological lesion could be found. In the case he had reported, the first report was status lymphaticus; the second, occlusion by tubercular nodule, the thymus being rather large in size. It was very interesting from the pathological standpoint.

Dr. Cohen had asked about the dyspnea. When the child came to his office, its color was at first perfectly normal, and he saw no indications of any such conditions as the parents described. There was a very slight roughness, and a little dyspnea, but after the child walked up and down across the floor there was considerable dyspnea and moderate cyanosis; it was apparently inspiratory and expiratory, but with the expiratory more marked than the inspiratory. Dr. La Fetra, who has had a wide experience with children, declared that it was an absolutely normal condition to him. There was absolutely no cough, no temperature, nothing to go by.

XVII. ESOPHAGEAL DIVERTICULA, AND REPORT OF A CASE.

EMIL MAYER, M.D., New York.

The difficulties in the way of diagnosis, as well as the question of treatment, were, in the speaker's opinion, sufficient to warrant the presentation of this subject. He emphasized the need of great care in the use of instruments until the nature of the disease was sufficiently known to make their use reasonably safe; disastrous results might follow instrumentation when aneurysm was present. Routine methods should be employed, including ballooning the esophagus, and the esophagoscope should be employed last of all. In the case presented, the x-ray picture was made after a soft rubber tube filled with shot had been inserted. This gave a picture that required no interpreter. His final conclusion was that modern surgery offers much hope for these sufferers.

DR. CHEVALIER JACKSON, Pittsburg, said that he would rather as the first procedure have Dr. Mayer pass the esophagoscope gently and see what he was doing than to have the bougie passed blindly. That seems a much more dangerous procedure than a skillful esophagoscopy.

DR. T. GORDON WILSON, Chicago, reported a unique case of diverticula which occurred in a young lion twenty months of age, showing that diverticula can occur without the age limit. He has observed that as age proceeds one can notice a thickening of the lower walls, but this case showed that the same thing can occur in youth. Another point is that there is a thickening of what Killian called the sphincter muscle of the esophagus.

DR. MAYER, closing the discussion, said that if any of his patients were going to Dr. Jackson or Dr. Mosher, he would wish these gentlemen to examine them any way they liked, but a warning should be sounded for those who have not special skill, and their attention should be called to the possible harm that may be done even by the esophagoscope, which is perfectly safe in trained hands. For this reason, speaking generally, he would advise a routine method of examination.

(*To be continued.*)

## Book Reviews.

*Diseases of the Stomach and Upper Alimentary Tract.* By ANTHONY BASSLER, M.D. Philadelphia: F. A. Davis Company. 1910.

This volume constitutes a very valuable work on the anatomy, physiology, chemistry, nosology and therapeusis of the upper alimentary tract. This includes essentially the esophagus and stomach; diseases of the mouth are but briefly considered, and although duodenal ulcer is included, diseases of the pancreas are omitted as belonging more properly with those of the biliary passages. The book is "copiously illustrated with numerous half-tone and line text engravings and fifty-six full-page plates (with nearly one hundred figures, plain and in colors, from original photographs and drawings)." Among the best of these illustrations is a series of fifteen x-ray plates representing various pathologic, gastric and esophageal conditions. The chapters on methods of physical examination seem particularly pertinent and well written. The volume should be useful to internists and general practitioners as well as to specialists in gastro-enterology.

*The Diseases of Infants and Children.* By EDMUND CAUTLEY, M.D. Cantab., F.R.C.P. Lond., Senior Physician to the Belgrade Hospital for Children; Physician to the Metropolitan Hospital; formerly Casualty Physician and Assistant Demonstrator of Physiology at St. Bartholomew's Hospital. Pp. 1042. New York: Paul B. Hoeber. 1910.

In the preface the author states that this book is written for the general practitioner rather than for students. In consequence, description of some common ailments have been curtailed and more attention given to rare and more recently recognized maladies. Illustrations and charts have been omitted because the author believes that this "kindergarten method of teaching" is a disadvantage to the practitioner "in that the expectation of seeing the typical cases of pictorial illustration increases the danger of overlooking those early stages in which disease is amenable to treatment."

It is, of course, impossible to review in detail a book of over one thousand closely printed pages. The book contains an immense amount of material which is not very well arranged. There are many things in it which are not found in most textbooks, such as a description of the theories of heredity, a chapter on the anomalies of growth, and one on disorders of the higher faculties. The author, evidently, does not appreciate in any way the real meaning and purposes of percentage feeding, and is seemingly unaware of the recent work of German authorities on the disturbances of digestion and metabolism. It seems strange to an American pediatrician to see so much drugging recommended in the treatment of diseases of infancy and childhood. It seems to us that much of the treatment mentioned is irrational and more unnecessary. The book is especially interesting in that it gives the English point of view of pediatrics, which is different from either the American or the German.

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THE BOSTON

:dical and Surgical Journal.

THURSDAY, DECEMBER 29, 1910

*A Journal of Medicine, Surgery and Allied Sciences, published at Boston, weekly, by the undersigned.*

SUBSCRIPTION TERMS: *$5.00 per year, in advance, postage paid, for the United States, Canada and Mexico; $6.50 per year for all foreign countries belonging to the Postal Union.*

*All communications for the Editor, and all books for review, should be addressed to the Editor of the Boston Medical and Surgical Journal 809 Paddock Building, 101 Tremont Street, Boston.*

*All letters containing business communications, or referring to the publication, subscription or advertising department of this Journal, should be addressed to the undersigned.*

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101 TREMONT STREET, BOSTON, MASS.

## CHRISTMAS AND THE PHYSICIAN.

THE annual recurrence of the Christmas season affords the physician many objects of interesting contemplation and reflection. Apart from sporadic instances of gastronomic indiscretion, it usually brings a lull in his work, for every one is too busy to pay much attention to the ordinary physical ailments. This is true at hospitals as well as in private practice: every patient, except the sickest, has a cheerful look and the wards assume an unwonted holiday atmosphere. Probably the latter phenomenon is largely produced by the Christmas decorations which modern charity spreads with a lavish hand through so many institutions. There is a therapeutic magic about the holly, even when it is artificial, or, as one might say, synthetic; and its little red berries, like many other boluses, do more good by suggestion than much medicine that is swallowed. Then there is the Christmas tree, which every hospital, great and small, has nowadays, often with an attendant Santa Claus. The children's hospitals are the places to see the Christmas tree in its perfection, for here the tinsel and spangles, the candles and stars, find their most appreciative and unsophisticated enjoyment. The toys of nowadays are likewise wonderful to contemplate, — the ingenious mechanical engines, the fluffy cats and rabbits, and the woodenly expressive "dux" animals. Children easily forget their troubles in joy over such as these. Nor are we much unlike them: after all, life consists of caring for and playing with one toy after another. Perhaps this is the chief secret in the spell of Christmas, that for a time it conciliates all ages on a common meeting-ground of happiness. It is a spell that extends beyond the day and through a whole week, till New Year's comes to symbolize the beginning of life and work anew. Our Christmas, like all else in civilization, like man himself, is a "piebald miscellany," a fantastic mixture of pagan and Christian, of Scandinavian, Teutonic, Celtic and Latin customs, superstitions and observances. It is the truce of the old year, which for a time opens the barriers between earth and Olympus, that the Olympians may descend. The physician must see much of the tragedies of life; let him appreciate also this time of human reconciliation that heals diseases which are beyond his cure with the immemorial anodyne of peace and good-will.

## REPORT OF THE SURGEON-GENERAL OF THE NAVY.

THE annual report of the Surgeon-General of the United States Navy, dated Aug. 23 last, but just received from Washington, describes "the operations of the Bureau of Medicine and Surgery for the fiscal year ending June 30, 1910, and the health and sanitation of the Navy and Marine Corps for the calendar year 1909." The data of this report present many valuable and interesting statistics, which, with the comment and discussion of Surgeon-General Stokes thereon, make very profitable and instructive reading.

Among the points to which especial attention may be directed is the table showing the relative importance of causes of death. Of 286 deaths in the Navy and Marine Corps in 1909, 51 were due to drowning, 40 to tuberculosis, 19 to pneumonia, and 17 each to typhoid fever and gunshot wounds. That tuberculosis should kill so many men leading a supposedly healthy outdoor life seems surprising until one considers the large part probably played in this disease by predisposition and the fact that conditions aboard a modern warship are far different from those on a sailing vessel; but that more men should die of drowning than from any other cause is unnecessary and preventable. It is proverbial that sailors do not know how to swim. No doubt the percentage of swimmers among sailors is as high as among landsmen, but their opportunities for falling into the water are much greater. To prevent the waste of life consequent upon this deficiency, Dr. Stokes recommends that instruction in swimming be made part of the training of every officer and man, and that his "demonstrated ability to swim a substantial distance, say, 300 yards, and to sustain the head above

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water for fifteen minutes in the presence of a light breeze," be made one of the first requirements for his being allowed to remain in the service.

Another point upon which especial emphasis is laid is the maintenance of general physical efficiency in the navy. With the change from sailing to steam vessels, with the specialization instead of general training required of different members of the crew, this has become more and more difficult to secure. Dr. Stokes believes that the present annual physical test does more harm than good, since it puts upon the individual a sudden strain for which he is often unprepared. He therefore recommends the substitution for it of "more recreative and continuous athletic exercise, and for the younger personnel the adoption of the Swedish system of physical training" instead of the present setting-up exercises.

The problem of venereal disease is always one of the gravest among sailors, as indeed it is in civil life. Its importance is indicated by the fact that in 1909 gonorrhea alone constituted over a sixth of all the cases of sickness in our navy, more than any other one disease; and gonorrhea, chancroid and syphilis together comprised over a quarter of all cases. During the same period disability resulting from syphilis was the reason for more discharges from the service than any other one cause. As a means of combating this "greatest damaging disease group," Dr. Stokes urges the enforcement "throughout the entire service, ashore and afloat," of a system of venereal prophylaxis such as has been adopted and practiced with considerable success in the Asiatic and Atlantic fleets. Details of this system are not stated in the present report, but its employment certainly seems to have been of some value.

Finally, in discussing the relatively high incidence of typhoid fever in our navy, the Surgeon-General says: "English, German and American military statistics and experiences point with increasing certainty to the advisability of adopting typhoid vaccination for the protection of persons likely to be exposed to infection," and recommends the extension of compulsory anti-typhoid vaccination "to the entire personnel under the age of fifty years."

These are merely topics selected for comment from among many of equal value and interest which make this report worthy of careful perusal by physicians and sanitarians throughout the country.

## STANDARDS IN SELECTION OF RECRUITS FOR THE ARMY.

A RECENTLY published report of the Secretary of War presents significant data relative to causes of rejection of recruits for the United States army. Of 100,996 candidates examined during the past year, only 19% were accepted. The rejections, however, were not all on physical grounds, since a considerable number were for lack of requisite mental, moral or technical qualifications. The standard of physical efficiency required in the army is doubtless very high, and the failure of so many to attain it does not necessarily indicate physical degeneracy among the people. Incidentally, the theoretical selection of the physically fittest to constitute the army of a country illustrates the fallacy of war, since it condemns to celibacy and exposes to disease and death during their years of greatest vigor many of those who should be doing the work and increasing the numbers of the nation. In a large country like ours, with a small army in times of peace, this disadvantage is negligible and is probably more than offset by the gain in discipline of those who serve a limited period. But in countries with a relatively large army and in times of war, as in our Civil War, the fittest are selected to perish, and the less fit physically survive to propagate the species.

## SOME GENEROUS PUBLIC BEQUESTS.

THE will of the late Mrs. William O. Moseley, of Newburyport, Mass., which was filed for probate on Dec. 22 in the Essex County Probate Court at Salem, Mass., made public bequests amounting to $370,000. To the Anna Jaques Hospital, Newburyport, is given the sum of $200,000, to be divided into two equal funds, the income only of which is to be used respectively for regular expenses of the hospital and for the maintenance of free beds. A further sum of $10,000 will revert to the hospital after the death of one of the private beneficiaries. Sixty thousand dollars are left to Harvard University "for the establishment of two fellowships to enable medical students of marked ability to pursue their studies abroad." The Moseley Professorship of Surgery was established some years ago in the Harvard Medical School by a gift of $50,000 from Mrs. Moseley's husband. Mrs. Moseley's will further contains bequests of $5,000 each to the Convalescent Home of the Massachusetts General Hospital, the Massachusetts Charitable Eye and Ear Infirmary, and several

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general charitable or religious institutions. Mrs. Moseley had also been a liberal donor in charity during her life. Her generous legacies will preserve the memory of these benefactions and increase the debt of gratitude already owed her by the community.

## THE RETIREMENT OF DR. JELLY.

The resignation of Dr. George F. Jelly from the various activities with which he has long been identified should not pass unnoticed. Since 1869 he has been closely associated with work in connection with the insane, first as assistant and later as superintendent of the McLean Hospital, and since 1879 as a practitioner in this city, specializing from the first in psychiatry. It is not, however, to his wide recognition as a practitioner in this difficult field that we desire to call attention, but rather to his broader service to the public as examiner for the Registration Department of Boston, a position which he held for thirty years, and as an active member of the State Board of Insanity, of which he was chairman for ten years. In these posts he has always been known as a man of exceptional judgment, combining with a wide and well-considered experience a degree of common sense and wisdom not often seen in dealing with the intricate and far-reaching problems of insanity. These qualities have made him an expert witness sought and trusted in these days of over-refined knowledge on the one hand and of unscrupulous ignorance on the other. In the retirement of such a man from public life, the city, which he has so well served, loses an influence which has always worked for exact justice and fair dealing in a field of endeavor in which firm opinions are alike difficult to form and to maintain. What Dr. Jelly represents is an invaluable asset to any community. His place will be difficult to fill.

## MITIGATION OF DROUGHT IN NEW ENGLAND.

In the issue of the Journal for Dec. 15, we commented editorially on the continuance of drought in Massachusetts, and the seriousness of the situation thereby induced in several New England towns. During the succeeding weeks, the shortage of water became even more acute. The supply at West Springfield, Mass., was entirely exhausted, so that drinking water had to be obtained through a temporary line of hose across the toll bridge from Springfield. At Worcester, Mass., the available supply was reduced to one fifth its normal amount and water famine seemed so imminent that all hydraulic elevators and public watering-troughs in the city were cut off. In Connecticut, the cities of New Haven, Norwich, Hartford and Waterbury were all much reduced in water supply. At Greenwich, Conn., the supply fell so short that schools and factories were closed and steam furnaces put out. There was similar shortage in the adjacent villages of Portchester and Rye in Westchester County, New York. Happily, however, the extensive and heavy rain of Dec. 24 has relieved this situation to a considerable extent, and the thaw associated with it has added still more to many reservoirs. The water supply in numerous localities is still scanty, notwithstanding, and, in the absence of further rain, there is likely to be a recurrence of the recent scarcity before the end of the winter.

## MEDICAL NOTES.

Birth of Quadruplets. — From Dunellen, N. J., is reported the birth on Dec. 25 to Mrs. John Cortright, of Sebring's Mills, N. J., of quadruplets, three boys and a girl, at her first pregnancy. The children are said to be all living and apparently healthy. Their weights are not stated.

Institute of Dental Pedagogics. — The annual convention of the National Institute of Dental Pedagogics has been held in Washington, D. C., on Dec. 27, 28 and 29 of this week. It was attended by deans of dental colleges throughout the United States and by other official delegates. The subject for discussion by the convention was "The Methods of Teaching Dentistry."

Hookworm in Alabama. — It is reported from Montgomery, Ala., that a recent investigation by Dr. H. G. Perry, a state field agent of the Rockefeller Hookworm Commission, shows that 70% of the schoolchildren of Dothan, Ala., and 75% of the rural population of Houston County in that state, are infected with uncinariasis. These figures corroborate previous estimates of the extent of hookworm infection in the South and of the magnitude of the task of its eradication.

Abatement of the Cholera Epidemics. — During the week ending Dec. 24, only 9 new cases and 3 deaths of Asiatic cholera were reported from Italy, as against 22 cases and 7 deaths during the preceding week.

Report from Lisbon states that the cholera epidemic in Madeira is also decreasing. On Dec.

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19 the Portuguese cruiser *Almirante Reis* was dispatched from Lisbon to Funchal with a number of physicians and marines and with fresh supplies of medicine and food.

A CENTENARIAN. — Mrs. Margaret Cassidy, who died on Dec. 24 at the House of the Good Shepherd in Philadelphia, was said to have been born in Scotland in 1805. She was the oldest inmate of the House, in which she had lived for the past thirty years. It is believed that she has no surviving relatives.

TWO OPIUM SEIZURES. — Two large seizures of opium in this country were reported last week. The first was at Buffalo, N. Y., where, in a raid by federal officers, $5,000 worth of the crude drug were seized and ten Chinamen arrested on a charge of preparing it for smoking without paying the internal revenue duty. The second seizure was made at San Francisco by customs inspectors, who found and confiscated 75 tins of opium, valued at $4,000, on board the liner *Asia*.

SEIZURE OF ADULTERATED FOODS. — Last week 350 cases of tomato catsup shipped from Mt. Holly, N. J., were seized by United States officials. The catsup is alleged to contain "filthy, decomposed and putrid animal and vegetable substances." On complaint of the federal pure food inspectors, the United States marshal at San Francisco also seized a shipment of tomato paste from New York, supposed to be similarly adulterated.

BUBONIC PLAGUE IN MANCHURIA AND CHINA. — In last week's issue of the JOURNAL we recorded a temporary abatement of the epidemic of bubonic plague in Manchuria. Recent advices from St. Petersburg, from Pekin and from Victoria, B. C., however, report a recrudescence of the disease in Manchuria, and its extension into Mongolia, an adjacent province of northern China. The situation is complicated by flood and famine. It is stated that in Ankin alone 2,500,000 persons are destitute. Under such circumstances, and with the customary Oriental disregard of sanitation, the spread of the plague may be expected to be very rapid and the loss of life enormous.

AN INSTANCE OF BODY-SNATCHING. — We are accustomed to think of burking and body-snatching as obsolete practices of a bygone day. Report from Montreal, Canada, however, records the recent arrest of a former medical student in Jarvis, Ont., for robbing a grave for anatomic material. The grave was found empty and the body it should have contained was discovered in a local cold storage warehouse in a barrel marked "poultry." There was a time when such zeal in the cause of science would have been almost laudable, but in the present state of the anatomy laws in the Dominion such an occurrence is exceedingly unfortunate, since it will bring only misunderstanding and discredit on the medical profession.

TWO LIVING CENTENARIANS. — Mrs. William T. Temple, of Reading, Mass., is said to have been born in that town on Dec. 20, 1810, and celebrated last week the supposed centennial anniversary of her birth. She has spent her entire life in Reading, and has occupied her present home for the past fifty-seven years. In her youth she was a nurse. She married in 1840, and has had five children, of whom the eldest, a son, and the youngest, a daughter, are still living. Her husband died in 1898. She is very deaf, but is otherwise in excellent health.

James Forbes Foster, who is alleged to be one hundred and seven years of age, has recently been evicted from his home in Kansas City. He was born in Buffalo, N. Y., and has always led a roving life as a mine-owner and adventurer. It seems unfortunate that he cannot pass even his declining years in peace.

VON LEIDEN'S KLINIK. — The report that Dr. Von Leiden's Klinik in Berlin has been closed since his death is apparently incorrect. Our readers may be interested to know that the Klinik at 4a Cornelius Strasse is being continued under the direction of Excellenz Von Leyden's pupil and assistant, Prof. Dr. Paul Lazarus.

DANGERS OF THE MISTLETOE. — It is reported from Blytheville, Ariz., that three small children in the neighboring town of Luxora died on Dec. 25 of acute poisoning from eating mistletoe berries. The berries of English mistletoe are not commonly considered toxic; in fact, among the medieval pharmacologists they used to be employed as an antispasmodic. The external use of the mistletoe is more pleasant, though at times even more dangerous, than its internal administration.

NEW YORK POST-GRADUATE MEDICAL SCHOOL AND HOSPITAL. — The New York Post-Graduate Medical School and Hospital is making arrangements, on the completion of its new buildings, greatly to extend the scope of its laboratory work, both as an adjunct to the increased hospital service, — which will consist of approximately 400

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beds, — and as regards departments for teaching pathology, bacteriology and clinical organic chemistry.

In addition to the laboratory for tropical medicine, in collaboration with the medical departments of the army and navy, it is proposed to provide ample space for the separate laboratories for pathology, bacteriology and chemistry under one general direction.

Cats and Tuberculosis. — A physician from Cleveland, Ohio, has recently called renewed attention to the liability of the dissemination of tuberculosis by domestic cats. It has for some time been recognized that cats are particularly prone to tuberculosis, diphtheria and other infections, which they are, therefore, likely to transfer between individuals and from one family to another. The habit of fondling pet animals is always dangerous, particularly on the part of children, whose affections are likely to outstrip their discretion. In other climates, the dog is even more liable to be a disseminator of serious infections, but among us the cat is probably more often a source of disease.

### BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston.— For the week ending at noon, Dec. 27, 1910, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 52, scarlatina 25, typhoid fever 2, measles 37, smallpox 0, tuberculosis 55.

The death-rate of the reported deaths for the week ending Dec. 27, 1910, was 18.36.

Boston Mortality Statistics. —The total number of deaths reported to the Board of Health for the week ending Saturday, noon, Dec. 17, 1910, was 217, against 215 the corresponding week of last year, showing an increase of 2 deaths and making the death-rate for the week 16.79. Of this number 118 were males and 99 were females; 212 were white and 5 colored; 122 were born in the United States, 93 in foreign countries and 2 unknown; 40 were of American parentage, 148 of foreign parentage and 29 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 36 cases and 4 deaths; scarlatina, 33 cases and 1 death; typhoid fever, 2 cases and 2 deaths; measles, 26 cases and 1 death; tuberculosis, 62 cases and 24 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 34, whooping cough 2, heart disease 19, bronchitis 3. There were 11 deaths from violent causes. The number of children who died under one year was 29; the number under five years 46. The number of persons who died over sixty years of age was 67. The deaths in public institutions were 85. Cerebrospinal meningitis, 1 case and 1 death.

Of the above infectious diseases the following were non-residents: Consumption, 2 cases. Scarlet fever, 2 cases. Diphtheria, 2 cases and 1 death. Measles, 1 death.

Deducting deaths of non-residents, the total is 202 and the death-rate is then 15.63.

Appointment of Chief Veterinarian. — Dr. P. J. Cronon, of Boston, was last week appointed chief veterinarian of the city street department, to succeed Dr. L. H. Howard, the former incumbent, who recently resigned.

Meeting of Army Nurses. — A meeting of the Massachusetts Army Nurses' Association was held in Dorchester last week. This organization consists of the survivors of those women from Massachusetts who served as army nurses during the Civil War. At the meeting there were several addresses, followed by a reception.

Gift to the Deaconess' Hospital. — The gift is announced, from a resident of Concord, Mass., of one hundred acres of land in that town to the New England Deaconess' Hospital, together with $10,000 towards the erection and maintenance there of a new hospital building, similar to the one now in Longwood. This gift, of charity and sentiment, should prove a source both of benefit to the town of Concord and of happiness and satisfaction to the generous donor.

Suspension of Druggists' Licenses. — The Boston Licensing Board has recently suspended until April 30, 1911, the license of two South Boston druggists to sell intoxicating liquor. This action was taken on complaint by the police board that the druggists in question made illegal sales of liquor on Sunday to members of the force. The suspension of their licenses is not only a just punishment, but also will act in the interest of temperance and of police efficiency.

Illegal Sales of Milk and Vinegar. — In the central municipal court last week two milk dealers, of Cambridge, Mass., and Somerville, Mass., respectively, were fined $10 each for having in possession, with intent to sell, milk not up to the standard required by law. Another dealer was fined $10 for selling milk without a license, and a fourth $10 for selling as pure cider vinegar

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vinegar that was not such. Another milk dealer, who admittedly sold loose milk from an open receptacle, in violation of the ordinance of the board of health, was fined $10 and appealed his case to the Supreme Court on the ground that in the district which he supplies the conditions are such as to make it impracticable to supply milk as required in sealed receptacles.

Repeated Request for City Hospital Appropriation. — In the issue of the Journal for Dec. 15, we noted the recommendation by the trustees of the Boston City Hospital of an additional loan appropriation of $297,800. The request for this appropriation has been repeated, on the ground that there is urgent need of provision for the accommodation of contagious cases which cannot be received at any other large Boston hospital.

The Harvard Cancer Hospital. — Work has been begun and is now well under way in the construction of the new Harvard Cancer Hospital, on the corner of Vandyke Street and Huntington Avenue, near the Harvard Medical School; and it is expected that the building will be completed by Sept. 1, 1911. An additional fund of $250,000 is needed as an endowment for its maintenance, and it is to be hoped that generous contributions may complete this sum by the time the hospital is opened.

Appointment to the State Board of Insanity. — On account of ill health, Dr. George F. Jelly, of Boston, recently resigned his position as a member of the Massachusetts State Board of Insanity. As his successor, Governor Draper nominated, last week, Dr. Edward Wyllys Taylor, of Boston, instructor in neurology at the Harvard Medical School, and one of this Journal's editors. Dr. Jelly's years of faithful and efficient service have set a particularly high standard of duty for the office to which Dr. Taylor is called.

Changes at St. Elizabeth's Hospital. — It is announced that St. Elizabeth's Hospital, Boston, has recently acquired a large and valuable tract of land in Brighton on which to erect a new hospital building. Coincident with this announcement is that of the appointment of Dr. William A. Brooks, Jr., of Boston, as chief of the surgical staff, with Dr. Edward A. Supple, of Boston, as his first assistant; and of Dr. Thomas F. Harrington, of Boston, as chief of the medical staff, with Dr. Michael J. Cronin, of Roxbury, as his first assistant. This reorganization of the hospital staff will presumably become operative before the removal of the hospital to its new site.

Relocation of Foxboro State Hospital. — In a recent special report to the Massachusetts Legislature, the trustees of the Foxboro State Hospital for Inebriates recommended the removal of this institution to more suitable and extensive quarters. It is now announced that 648 acres of land in the townships of Norfolk and Walpole, Mass., have been selected for this new site, and will shortly be purchased, with the buildings thereon, from an appropriation available for the purpose. The transfer of patients will not begin until spring and will be gradual. It is intended that the institution, which will be conducted on the cottage system, shall be a model for the rational, scientific treatment of inebriety. "The hospital for men will receive, under the new conditions, patients who come voluntarily or who are committed upon application; young habitual drunkards placed on probation by the court on condition that they spend a specified time at the hospital, and suitable cases transferred on parole from the colony for the detention of chronic drunkards. The hospital for women will receive voluntary and probation cases. The detention colony will receive non-criminal, habitual drunkards from the criminal courts on indeterminate sentence." The old buildings at Foxboro will be held by the State Board of Insanity for use in the accommodation of the insane in Massachusetts.

### NEW YORK.

Saturday and Sunday Association. — The Saturday and Sunday Association is making an effort this year to secure $200,000 by its annual collection, or about double the amount usually raised. In answering its appeal, Mayor Gaynor, who is, *ex officio*, chairman of its distributing committee, has sent a check for $50 enclosed in a letter in which he commends the purposes of the association to the public.

Hunting Casualtes. — In New York state during the recent open season for deer, there were 28 hunting casualties, 3 men were killed and 3 seriously injured through being mistaken for deer. Through carelessness or accident 16 others were killed and 6 injured, and practically all these casualties were in the Adirondack region. Last year the record was much less serious, there having been 15 casualties, of which one third proved fatal.

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Verdict against Physicians for Performing an Autopsy. — A verdict for $8,000 was rendered by a jury in the Queens County Supreme Court, Long Island City, Borough of Queens, on Dec. 12, in a suit for $10,000 damages brought against two physicians for performing an authorized autopsy on the body of a patient who died last year in St. Joseph's Hospital, Far Rockaway. The action was undefended, one of the physicians being absent in Cuba and the other denying that he was one of the defendants, and the case will no doubt be appealed. It was stated by the counsel for the plaintiffs, who were the children of the deceased, that this was the first case of the kind ever brought to trial in the state of New York.

Annual Report of Charity Organization Society. — In the twenty-eighth annual report of the Charity Organization Society, just issued, considerable attention is devoted to the subjects of over-work and occupational diseases. In the discussion of the latter it is stated that the existence of a serious form of phosphorus poisoning in match factories in this country has recently been revealed, contrary to popular impression. A bill placing a prohibitive tax on the use of the poisonous but less expensive variety of phosphorus in the manufacture of matches, the report goes on to say, has been introduced into Congress. By this legislation, when secured, the United States will finally take its place on this point with all the other important commercial countries of the world.

An Alliance between the Presbyterian Hospital and Columbia Medical School. — It has just been announced that when the new Presbyterian Hospital, which is to be erected on a site adjoining the Rockefeller Institute, has been finished, an alliance will go into effect between the hospital and the medical department of Columbia University which will correspond with the conditions existing at the Johns Hopkins University and Hospital. While for many years most of the visiting staff of the Roosevelt Hospital have been professors or instructors in the Columbia Medical School, it would appear that there has never been any official connection between the two institutions. Under this new arrangement, however, the appointments to the medical and surgical staff of the Presbyterian Hospital will be under the direct control of the medical school. Through the liberality of the late John S. Kennedy and others the hospital authorities have ample funds for the construction of the new buildings, and now it is stated that the sum of $1,300,000, contributed by Edward S. Harkness and another donor whose name is withheld, is available for carrying out the proposed alliance with Columbia. Among the features agreed upon is a department for research work, which is to be under the control of the university. It is also announced that in addition to his other gift, Mr. Harkness will provide $300,000 for the erection and equipment of a special surgical pavilion at the hospital. The contemplated new buildings of the College of Physicians and Surgeons will no doubt be located in the immediate vicinity of the new hospital.

Increase and Prevention of Insanity. — A campaign for the prevention of insanity in the state of New York, which is to be carried on under the direction of the State Charities Aid Association, was inaugurated on Dec. 23 at the Academy of Medicine, at a meeting held under the auspicies of the Section on Public Health of the Academy. Dr. A. W. Ferris, President of the State Commission in Lunacy, said that the state was now caring for 35,520 mental defectives, of whom 32,658 were insane, a proportion of 1 lunatic to every 289 of the population. Last year 6,400 new cases were admitted to the state hospitals, a net increase of 1,200. The increase of known cases, however, was no doubt due largely to the more accurate methods of diagnosis now practiced, and the more thorough attention paid to the insane. He assigned alcohol as the most prominent cause of insanity, nearly 30% of all the cases under the charge of the state being due to this. Another important cause was too free immigration. The total foreign population was 35%, but the percentage of foreign-born lunatics in the institutions was 45%. Among the measures mentioned by Dr. Ferris which might be adopted are the following: Field work in hospital districts by special physicians attached to the staff; co-operation of physicians and special societies; social service by lay committees; a general campaign of interest and education; special care of the backward or abnormal child. Prof. M. Allen Starr said that he looked upon the campaign most hopefully. Only 30% of cases that reached the insane asylums were of classes not susceptible of preventive treatment; 20% produced by alcohol and drugs are not beyond hope of control, and 50% due to infections, auto-intoxication, emotional strain and overwork are preventable. An address was also made by Homer Folks, Secretary of the

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State Charities Aid Association, in which he told how it was purposed to conduct the campaign and stated that already voluntary contributions sufficient to carry on the work for three years had been received.

## Current Literature.

MEDICAL RECORD.

DEC. 17, 1910.

1. KAKELS, M. S. *Concerning the Ehrlich-Hata Preparation No. 606.*
2. MOSCHGOWITZ, A. V. *Intussusception of the Appendix.*
3. POTTER, N. B. *Typhoid Spine: Report of a Case, with Radiograms; Completed Bibliography.*
4. ERDMANN, J. F. *A Case of Stab Wound of the Heart.*
5. CHANCE, B. *Spontaneous Rupture of a Glaucomatous Eyeball.*
6. SECOR, W. L. *A Brief Comparative Study of Heart Stimulants used during Fevers, with a Recommendation of the Precordial Compress.*
7. ROBINSON, W. J. *Chancroids Due to a Peculiar Cause.*

NEW YORK MEDICAL JOURNAL.

DEC. 17, 1910.

1. ARROWSMITH, H. *Certain Aspects of Rhinolaryngology and Their Relation to General Medicine.*
2. PROESCHER, F. *A Contribution to the Etiology of Poliomyelitis.*
3. BRYANT, W. S. *Epidemic Poliomyelitis.*
4. HARRISON, R. *Report of a Case of Congenital Hypertrophic Stenosis of the Pylorus.*
5. O'MALLEY, M. *A Case of Mixed Cell Sarcoma of the Pituitary Body with Report of the Autopsy Findings.*
6. OTTENBERG, R. *Froehlich's Syndrome in Cases of Pituitary Tumor.*
7. BENEDICT, A. L. *Spontaneous Appearance of Indigo Blue in the Urine.*
8. FRANKEL, B. *Insufficientia Pylori.*
9. KNOTT, J. *Magic and Medicine: A Study in the Borderland of Scientific Light and Darkness.*

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

DEC. 17, 1910.

1. LUSK, G. *Metabolism in Diabetes.*
2. WALLACE, G. B. *Recent Advances in the Treatment of Diabetes Mellitus.*
3. WOODYATT, R. T. *Action of Glycol Aldehyd and Glycerin Aldehyd in Diabetes Mellitus and the Nature of Antiketogenesis.*
4. *PRATT, J. H. *Relation of the Pancreas to Diabetes.*
5. HEIDINGSFELD, M. L. *Hairy or Black Tongue.*
6. SKILLERN, R. H. *Comparative Pathology of Hyperplastic and Suppurative Ethmoiditis.*
7. *SEVER, J. W. *Tuberculosis of the Ankle-Joint and Tarsus.*
8. MACLEOD, J. J. R. *Various Forms of Experimental Diabetes and Their Significance for Diabetes Mellitus.*
9. MAGNUS-LEVY, A. *Dehydration by Dietetic Measures, an Interpretation of the Karell, Oertel and Widal Treatment of Circulatory and Renal Diseases.*
10. COHEN, H. *Home Quarantine.*
11. CARREL, A. *Treatment of Wounds.*
12. GWATHMEY, J. T. *Vapor Anesthesia Apparatus.*
13. GOULD, G. M., AND DURAND, A. C. *Eye-Strain a Cause of Exopthalmic Goiter.*
14. RUSS, R. *Elephantiasis of Scrotum and Penis with Operation.*
15. BOESE, W. H. *A Case of Chronic Appendicitis Simulating Neoplasm.*

4. Pratt summarizes his historical and experimental article on diabetes as follows: Despite opposing theories and conflicting observations in regard to the relation of the pancreas to diabetes, some facts have been definitely ascertained. The total removal of the pancreas always leads to a fatal diabetes. Atrophy of the pancreas produced by excluding all the pancreatic juice from the intestine is associated with a marked decrease in the limit of assimilation for sugar. Transplantation of a portion of the pancreas prevents the development of diabetes when the rest of the gland is extirpated. Lesions of the islands of Langerhans are found in most cases of diabetes. They are usually associated with changes in the acini. In the progressive atrophy which follows the occlusion of all pancreatic ducts in dogs and cats, both islands and acini are gradually destroyed. All the islands may disappear, however, without diabetes resulting. The conclusion is justified that the pancreas has an internal function concerned with the metabolism of sugar. The nature of this function, relation of the islands to the acini, the significance of histologic changes in both structures, still await solution.

7. Sever points out that tuberculosis of the ankle-joint and bones of the foot in children is insidious in onset, chronic in its course and attacks usually young children. The expectant or conservative method of treatment is preferable to the operative. Time is saved and deformity less under the conservative than by the operative method. There is also less danger of secondary joint involvement and general tuberculosis by pursuing the non-operative plan. The prognosis is fairly good for hips, but poor for a good ankle-joint in which there is no disability. The results are good for joint motion when the disease affects the metatarsal bones. [E. H. R.]

THE LANCET.

NOV. 19, 1910.

1. LINDSAY, J. A. *An Address on the Prospect before the Medical Student of To-Day.*
2. *FITZWILLIAMS, D. C. L. *Hereditary Cranio-Cleido-Dysostosis, with a Review of all the Published Cases of this Disease: Theories of the Development of the Clavicle Suggested by this Condition.*
3. *LEES, D. B. *Twenty Cases of Pulmonary Tuberculosis Treated by Continuous Antiseptic Inhalations.*
4. JONES, R. *On Fractures in the Neighborhood of Joints.*
5. *TOMBLESON, J. B. *On the Use of Potassium Bichromate in the Treatment of Phthisis.*
6. WILLIAMS, E. K. *Two Cases of Compound Fracture with Tetanic Symptoms; Recovery after Injection of Anti-Tetanic Serum.*
7. MACDONALD, A. *Osteomyelitis of the Left Clavicle.*
8. MASTERMAN-WARD, J. L. *A Case of Uterus Bicornis Unicollis.*

2. Fitzwilliams, in a long and careful article, goes over the entire subject of hereditary cranio-cleido-dysostosis from every point of view and presents in tabular form all the previously reported cases of this rare condition and two cases of his own.

3. Lees reports on 20 additional cases to the 30 he has already described of pulmonary tuberculosis treated by continuous antiseptic inhalations. [Neither this method, nor the number of cases, nor the individual cases, are convincing. — J. B. H.]

5. Tombleson reports six patients with pulmonary tuberculosis who did remarkably well under ¼-gr. doses of potassium bichromate t. i. d. p. c. [The remarks made concerning the previous article apply here equally well. — J. B. H.] [J. B. H.]

NOV. 26, 1910.

1. *BASTIAN, H. C. *Observations on Thrombotic Softening of the Spinal Cord as a Cause of So-Called "Acute Myelitis."*
2. BLAND-SUTTON, J. *The Diseases of Elephant's Tusks in Relation to Billiard Balls.*
3. HUTCHINSON, J. *Diffuse Lipoma.*
4. *COBBETT. *The Progress of Infection in Phthisis. Containing a Plea for the Treatment of Early Cases by Absolute Rest.*
5. EMERY, E. *The Preparation of "606": The Treatment of Syphilis by Ehrlich's Method: Indications and Contra-Indications. Observations made in Germany.*
6. HIRSCH, C. T. W. *Motoring Notes.*

1. Bastian first emphasizes the wide discrepancy of the present views as to the pathogenesis of acute myelitis. He then discusses the etiology and pathogenesis of this

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condition according to his own views and briefly mentions acute poliomyelitis as an allied condition. He believes that the evidence is overwhelming that in the great majority of cases of acute myelitis and poliomyelitis the affection is caused not by an inflammation, but by thrombosis of some of the vessels of the spinal cord where in the latter disease it is not due to a special degenerative process.

4. Cobbett discusses the question of immunity in tuberculosis and the healing of any tuberculous process by the gradual acquiring of this immunity. He believes that the severity of the disease in any given case is in direct proportion to the number of bacilli present in the body. He believes that immunity can best be acquired by rest, and urges rest as the main feature of the treatment of this disease in its early stages. [This article is written by a pathologist; the sentiments herein expressed hardly accord with those of the majority of clinicians at the present time. — J. B. H.] [J. B. H.]

BRITISH MEDICAL JOURNAL.

Nov. 19, 1910.

1. *MORISON, R. *An Address on Some Points Concerning Tubercle, Syphilis and Malignant Disease.*
2. JORDAN, A. C. *The Röntgen-Ray Appearances of Thoracic Aneurysm.*
3. ELWORTHY, H. S. *Miner's Nystagmus.*
4. JEFFREY, G. R. *On the Cause of Neuropathic States.*

THE BRITISH MEDICAL ASSOCIATION.

*Section of Pharmacology and Therapeutics.*

5. *GRÜNBAUM, O., *et al. Discussion on Lactic Acid Therapy.*
6. UNNA, P. G. *New Facts Concerning Chrysarobin.*
7. *MEYER, H. *The Action of Lime Salts.*
8. MILLER, H. C. *The Treatment of Morphinomania by the "Combined" Method.*
9. FORTESCUE-BRICKDALE, J. M. *Comparative Therapeutic Value of the Organic and Inorganic Compounds of Certain Elementary Bodies.*
10. LAIDLAW, P. P. *The Action of Hydrastinine and Cotarnine.*
11. *WENCKEBACH, K. F. *Discussion on the Effects of Digitalis on the Human Heart.*
12. DALE, H. H. *The Active Principles of Ergot.*
13. *MATHISON, A. J. *Treatment of Lobar Pneumonia.*

*Section of Laryngology.*

14. TILLEY, H. *Introductory Remarks.*
15. VON EICKEN, C., *et al. Discussion on Direct Methods of Examining Air and Food Passages.*
16. HETT, G. S., *et al. Discussion on the Removal of the Tonsils.*

1. Morison discusses syphilis, cancer and tuberculosis as they simulate each other and as they occur in various combinations. Syphilis and tuberculosis he considers a deadly combination; cancer and syphilis are firm allies; if a person over sixty years of age contracts syphilis, his death from cancer may be anticipated.

5. Grünbaum, Hewlett, Bryce, Harley and others discuss the value of lactic acid as a therapeutic measure as used in sour milk preparations. The general opinion seemed to be that although in certain cases of constipation, rheumatic states, etc., it was of value, as a general thing the same good result could be gained by older and simpler methods. Moderation in eating is much more important than the drinking of sour milk.

7. Meyer believes that it has been clearly demonstrated that lime salts diminish the permeability of the walls of the blood vessels.

11. Wenckebach gives an excellent general consideration of the therapeutic and physiologic effects of digitalis; Mackenzie considers the subject from the clinical standpoint; Turnbull believes in pushing the drug up to full doses in order to get good results. The danger of doing harm is so slight as to be neglected. Raised blood pressure he believes to be no contra-indication.

13. Mathison makes an urgent plea for the use of creosote and potassium iodide in pneumonia. He speaks of a series of 20 cases with no mortality and with abortions in 4 cases. His arguments are not convincing. [J. B. H.]

Nov. 26, 1910.

1. WRIGHT, G. A. *A Clinical Lecture on the Use of Elastic Traction and Elastic Pressure in Surgery.*
2. *RUDOLF, R. D. *An Address on High Blood Pressure in Arteriosclerosis.*
3. LEWIS, T. *The Reaction of the Heart to Digitalis when the Auricle is Fibrillating.*
4. PENFOLD, W. J. *Variations of the Fermentation Properties of the B. Typhosus.*
5. RINGROSE, E. *A Case of Diaphragmatic Hernia in an Adult.*

THE BRITISH MEDICAL ASSOCIATION.

*Section of Otology.*

6. LAW, E. *Introductory Remarks by the President.*
7. BÁRÁNY, R., *et al. Discussion on the Diagnosis and Treatment of Infective Labyrinthitis.*
8. HOWELL, M. *Some Remarks on the Connection between Irritation of the Mucous Membranes throughout the Body and Middle-Ear Catarrh.*
9. *BARR, J. S. *Experiments Bearing upon the Practicability of Treating Meningitis (Septic and Specific) by Means of Lavage of the Cerebrospinal and Subarachnoid Spaces.*
10. YEARSLEY, M. *The Value of Ossiculectomy in Chronic Middle-Ear Suppuration.*
11. HORNE, J. *Deafness and Diseases of the Ear in Relation to the Public Services and Insurance; Their Bearing on Forensic Cases and the Choice of a Means of Earning a Livelihood.*
12. MILLIGAN, W., *et al. Discussion on Aural Tuberculosis in Children.*

*Section of Laryngology.*

13. FRASER, J. S. *Congenital Atresia of the Choanæ.*
14. *PEGLER, L. H. *Headaches in Association with Obstruction in the Nasal Passages.*
15. WILKINSON, W. C. *Tuberculin in Laryngeal Tuberculosis.*
16. BIRKETT, H. S., *et al. Discussion on Vasomotor Rhinitis.*
17. SPICER, R. H. S. *Cancer of the Throat.*

2. Rudolf, in a very practical article, discusses high blood pressure in arteriosclerosis and its treatment. The cause of a high blood pressure in this condition is usually to be classed among one or more of the following groups:

(1) Toxemia of some kind which directly poisons the vessel walls, such as syphilis.

(2) Some toxin which directly raises the blood pressure, as in the case of adrenal tumors.

(3) Compensatory high blood pressure.

(4) Simple nervousness.

(5) Arterial disease alone.

The treatment of this condition he discusses along with the cause. He compares the pressure-lowering effects of nitroglycerine, sodium nitrate, erythrol tetranitrate and mannitol nitrate. The latter maintains its effect even longer than erythrol and is to be preferred. He does not discuss baths, massage and other methods of reducing blood pressure.

9. Barr carried out an interesting experiment on the cadaver in which a lumbar puncture was done and the needle left in. After this a one-half-inch trephine opening was made above and slightly behind the left ear and a canula thrust into the left lateral ventricle. Carmine-colored fluid was then allowed to flow through the needle, which in less than a minute appeared through this canula in the lumbar region. The writer was about to continue this research on animals when a boy came into the hospital with diffuse septic meningitis. All other methods failing, and the boy being in a moribund condition, this operation was performed and large amounts of pus washed out through the lower opening. The pulse dropped and the general condition of the patient greatly improved. He died later on. The diagnosis was confirmed by autopsy.

14. Pegler, in a careful paper, discusses and classifies the various kinds of headaches associated with obstruction in the nasal passages. He presents in tabular form the characteristics of headaches due to other causes and their differential diagnosis from headaches of nasal origin. [J. B. H.]

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DEUTSCHE MEDIZINISCHE WOCHENSCHRIFT. No. 47.

Nov. 24, 1910.

1. HORTSMANN. *Etiology and Treatment of Detachment of the Retina.*
2. *SAHLI. *Further Development of the Sphygmobalometer or the Investigation of the Pulse Energy.*
3. *WEISS, O., AND JOACHIM, G. *Relation of Heart Sounds and Murmurs to the Electro-Cardiogram.*
4. WECHSELMANN AND SEELIGSOHN. *The Effect of Di-oxydiamidoarsenobenzol on the Eye.*
5. KRON, H. *Concerning Substitution for Muscle Defects.*
6. JENSEN, V., AND KOCK, A. *A Case of Paratyphoid Periostitis.*
7. JAPHA, A. *Use of Rhythmical Heart Compression in Unconsciousness in Children and Similar Conditions.*
8. RICHTER, P. *Stable Hydrogen Peroxide Preparation Pergenol and Its Use in Dermatological Practice.*
9. SCHOENEN. *A New Inhaling Apparatus.*
10. WALDOW. *A Simple Bandage.*
11. BERG. *Microphotography.*

2. Sahli in the year 1907 described a new apparatus for detecting the energy or working power of the pulse. He has worked over this method and now presents it in full with diagrams of the apparatus and a description for figuring out the energy of the pulse wave. He considers that these determinations will be of considerable value in regard to diagnosis and prognosis.

3. As a result of simultaneous registering of heart sounds and the electrocardiogram the following facts have been established: The first heart sound begins about .05 to .07 seconds after the beginning of the point of the initial rise; the second heart sound about .02 second after the following wave. The systolic murmur of mitral regurgitation begins at the time that the first sound begins in the normal heart, while the systolic murmur of aortic insufficiency begins later by about .06 to .09 second. The diastolic murmur of aortic insufficiency comes at the time of the second heart sound. In mitral stenosis, as a rule, the first sound comes late; the height of the stenosis murmur also comes after the first sound should begin. With reduplication of the first sound the first part is not caused by the auricles contracting. [C. F., JR.]

MÜNCHENER MEDIZINISCHE WOCHENSCHRIFT. No. 46.

Nov. 15, 1910.

1. RUPPEL. *Immunization of Animals against Tuberculosis.*
2. MÜLLER, R. *Arthropods as Transmitters of Disease.*
3. TREUPEL, G. *The Ehrlich-Hata Injection for Lues of the Central Nervous System, Tabes and General Paralysis.*
4. WILLIGE, H. *The Ehrlich-Hata 606 Used for Psycho-Neurological Conditions.*
5. LOEWY, A. *Effect of Pantopon on the Respiratory Center.*
6. BERGIEN, W. *Effect of Pantopon on Respiration and Circulation.*
7. SOHLER. *Trypsin Treatment for Surgical Tuberculosis.*
8. LOELE, W. *Demonstration of an Oxydizing Substance of the Body by Means of a Color-Reaction.*
9. ZWEIFEL, E. *Lumbar Anesthesia in the Gynecological Clinic of the University in Leipzig.*
10. MUSKAT. *Flat-Foot in the X-Ray Picture.*
11. v. METTENHEIMER, H. *Calorimetric Estimation of Infants' Food.*
12. KRAUSS, H. *Treatment of Hemophilia.*
13. LEVINGER. *Multiple Osteoma of the Air-Passages.*
14. BÖHM, F. *Occurrence of Typhoid in Augsburg.*
15. SANDER, H. *A Bandage Cutter.*
16. COHN, M. *The Question of Bolus Treatment.*

No. 47. Nov. 22, 1910.

1. *KREHL, L. *Caution Advised in the Use of Iodine.*
2. *ERB, W. *Intermittent Claudication.*
3. GARRÉ, C. *Etiology of Recurring Hydrops and Neuralgia of Joints.*
4. *STRASBURGER, J. *Influence of the Blood Vessels on the Circulation.*
5. ZIELER, K. *Development and Results of the Modern Treatment of Syphilis with Arsenic.*
6. PASINI, A. *A Simple Method of Injecting "606."*
7. *HAUDEK, M. *X-Ray Diagnosis of Penetrating Sclerosed Ulcer of the Stomach.*
8. JASCHKE, R. T. *The Question of Marriage for Women having Heart Lesions.*
9. CASSIRER, R. *Cyst of the Cerebellum Cured by Operation.*
10. EXNER, A. *Permanent Cure of Cancer by Radium-Rays.*
11. PHILIPPI AND MÜHLE. *Poisoning by Eating the Roots of Hyoscyamus Niger.*
12. GIEMSA, G. *A New Quick Method of Staining with My Azur-eosin Solution.*
13. STEINITZ, E. *The Simplified Wassermann Test of v. Dungern and Hirschfeld.*
14. DRÜNER. *The Operation for Phimosis.*
15. BRÜNINGS. *A Simple Aid to Diagnosis of Cancer of the Esophagus.*
16. TAVEL, E. *The Advantage of Carrard's Patient Lifter.*

1. Krehl says that he has frequently seen symptoms of thyroidism follow the use of iodides, and that these symptoms may be progressive and persistent. He believes that this is more likely to happen in cases having demonstrable disease of the thyroid gland or nervous symptoms suggestive of hyperthyroidism. He, therefore, advises against the use of iodine in all such cases. Cardiac "neuroses," loss of weight, irritability or any one of these complex functional disorders, a variety of minor complaints and even Graves' disease itself may be traced to iodine. The writer has not found that any one preparation is less dangerous than another; neither is he prepared to say in what cases iodine can be used without risk.

2. The evidence presented by the writer in the form of statistics points clearly to excessive smoking as a cause of the arteritis of intermittent claudication. He points out also that when no pulse can be felt in an artery there may be a systolic murmur produced by the passage of blood through it. Another interesting observation is that of 14 cases of claudication who smoked enormously, 12 had general arteriosclerosis. Erb has recently looked for apocamnosis as described by Goldflam and has found it in every case, 6 in all. After a little exercise of the legs and feet, blanching of the skin of these parts occurs.

4. Basing his deductions upon experimental work and observations, Strasburger gives an interesting discussion of the functions of the heart and blood vessels in maintaining the circulation. His arguments are too complex to be summarized briefly.

7. In this article Haudek publishes the results of observations on a much larger number of cases than he had had for the previous paper. He reaffirms and adds to the points which he brought out then, and says that he now believes penetrating ulcers of the stomach to be common rather than exceptional. His success in recognizing such with the fluoroscope is astonishing. The diagnosis was proven by autopsy or operation in most of his cases. [G. C. S.]

BERLINER KLINISCHE WOCHENSCHRIFT. No. 47.

Nov. 21, 1910.

1. WECHSELMANN. *Local and General Hypersensitiveness in the Use of Ehrlich's "606."*
2. ROSENTHAL, O. *Concerning "606."*
3. BAUM, J. *Mercury Reaction in Secondary Syphilis.*
4. KOWALEWSKI, R. *Optic Neuritis as an After-Result of Ehrlich's "606."*
5. NEISSER, C. *The Importance of Germ Carriers in Lunatic Asylums.*
6. WOLFF-EISNER, A. *Concerning Non-Toxic Tuberculin.*
7. MÜNZER, A. *The Internal Secretion of the Generative Glands.* (Conclusion.)
8. *SCHIELE, G. W. *The Treatment of Severe Wounds.*
9. KAISERLING, C. *Proof of the Existence and Importance of the Cell Lipoids.*

8. The author, in discussing the treatment of severe wounds where dirt and infection are ground into the edges of the wound and the tissues torn and bruised, declares that the best treatment is to disinfect by means of the scissors and forceps. Cutting away all torn margins and shreds of tissue he considers of more importance than irrigations or chemical antiseptics. When all the surfaces

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of the wound are freshened and cleaned in this way he believes in approximation of the wound loosely so as to allow drainage, but tightly enough to insure first intention healing. [J. L. H.]

Archiv für Klinische Chirurgie.

Vol. 93. Part 2.

1. Krause, F. *The Treatment of Non-Traumatic Forms of Epilepsy.*
2. *Wendel. *Surgery of the Esophagus.*
3. Mygind, H. *Otogenic Meningitis, with Particular Reference to Its Operative Treatment.*
4. Schöne, G. *Experimental Work on Healing of Wounds and Growth of Ulcers as Influenced by Disturbances of Metabolism and Infections.*
5. Fischer, O. *Uterine Adnexa as the Contents of Inguinal Herniæ in Women.*
6. Ludloff, K. *Experiments in Bone Suture.*
7. Küttner, H. *A Critical Examination of Ulcus Callosum Ventriculi, and the Treatment.*
8. Bircher, E. *The Operative Treatment of Acute Hemorrhagic Pancreatitis.*
9. Payr, E. *The Pathogenesis, Pathological Anatomy and Radical Operative Treatment of Gastric Ulcer.*
10. Franz, C. *The Explanation of Krönlein's Type of Bullet Wound of the Skull.*
11. Boljarski, N. *Liver Injuries from the Clinical and the Experimental Points of View, with Special Reference to the Use of Isolated Omentoplasty.*
12. v. Fedorow, S. P. *A Method for Removing Cicatricial Strictures of the Lower Rectum without Resection.*
13. Kohn, W. *The Anatomy and Etiology of Cracking of the Hip-Joints.*

2. In his article on surgery of the esophagus, Wendel writes mostly on the treatment of cancer, but has short sections on the cure of cardiospasm and of diverticula. Wendel himself has attempted radical operation in three cases of cancer, two of which died immediately afterwards. The operation he describes consists of opening the mediastinum, cutting the esophagus just below the tumor, and then, through an incision in the left neck, dissecting free the lower end of the proximal section and removing the cancerous segment. Following this, one of three things is done: The two ends are united if possible, both cut ends are sutured to the skin and connected by a canal of skin or by a rubber tube, or the lower piece is inverted and closed, and a gastrostomy done. The argument for undertaking such an operation lies mainly in the tendency of cancer in this situation to spread only by community, and not by metastasis. If the tumor is low in the esophagus, laparotomy may be combined with thoracotomy. The chief difficulty in the technic lies in the securing of exact closure of the pleura, provided this is torn, and of course some differential pressure apparatus must be used.

As regards cardiospasm, Wendel, in a case undilatable by sounds, performed a cardioplasty as one would a pyloroplasty, with excellent result. He has also done one extirpation of a diverticulum, with good success. [G. G. S.]

## Miscellany.

### HARVARD PUBLIC MEDICAL LECTURES FOR 1911.

Announcement is made of the annual series of free public medical lectures to be given during the first four months of the coming year at the Harvard Medical School by members of the faculty and other instructors. This year the Saturday evening lectures have been omitted, and the present series will be held only on Sunday afternoons at four o'clock. The popularity of these lectures seems now well established, and their possibilities of value in the desirable education of the people in medical subjects are obvious. The announcement of topics for the current season is as follows:

Jan. 1, Dr. R. W. Lovett, "Infantile Paralysis." Jan. 8, Dr. Abner Post, "Syphilis." Jan. 15, Dr. Otto Folin, "The Use and Abuse of Preservatives and Other Chemicals in Food Products." Jan. 22, Dr. S. A. Hopkins, "The Mouth in Its Relation to Disease." Jan. 29, Dr. E. H. Bradford, "Spinal Curvature; What can be Done to Keep Our School Children Straight." Feb. 5, Dr. Charles H. Williams, "The Correction of Blindness, Especially in Young Children." Feb. 12, Dr. Charles S. Minot, "Age." Feb. 19, Dr. Theobald Smith, "The Duties of the Individual in the Maintenance and Improvement of the Public Health." Feb. 26, Dr. E. E. Southard, "Heredity in Mental Disease." March 5, Dr. W. B. Cannon, "Vision and Some of Its Illusions." March 12, Dr. M. H. Richardson, "On Surgical Diseases and Their Mechanical Nature; What the Layman should understand of Their Early Symptoms and Importance." March 19, Dr. L. J. Henderson, "What is Food?" March 26, Dr. Charles V. Chapin, "How the Individual can protect Himself against Infection." April 2, Dr. J. G. Mumford, "The Safety of Surgical Operations." April 9, Dr. C. M. Green, "The Personal Hygiene of Women." (To women only.) April 16, Dr. Franklin W. White, "Indigestion; Its Causes and Treatment." April 23, Dr. Walter J. Dodd, "The Roentgen Ray in Medicine and Surgery." April 30, Dr. Harvey P. Towle, "Some Common Diseases of the Skin."

## Correspondence.

### ANTITYPHOID SANITATION *vs.* INOCULATION.

Brookline, Mass., Dec. 19, 1910.

*Mr. Editor:* In your editorial in the Journal of Dec. 8, on "Typhoid Fever Epidemics," you made the following statement: "The continued recurrence of such epidemics serves only to re-emphasize the insidious dangers of typhoid fever and *the seeming impossibility of its extermination by even the wisest sanitary provisions.*" As wise sanitary provisions have been sufficient in certain sections of Germany to prevent such epidemics and practically stamp out the disease, I think the above statement should be amended to read "such epidemics serve to re-emphasize the inefficiency or lack of sanitation in many parts of the United States."

Of the four epidemics to which you refer, three are said to be due to defective water or sewerage systems. As many communities in this country have demonstrated that water and sewerage systems can be provided from which there is practically no danger of typhoid infection, certainly these three epidemics cannot be said to emphasize the impossibility of exterminating typhoid by wise sanitation.

In regard to the fourth epidemic, which was due to infected milk, information is not at hand to show that the infection of the milk was due to the neglect of sanitary measures. The chances are, however, that either the case from which the milk was infected, or some other case in the chain of infection preceding that case, was the result of sanitary negligence. As far as I know, there is no rural district in this country where efficient sanitary precautions are taken to prevent the spread of infection from typhoid patients. Even when a case of typhoid is reported to the local health board, no use is made of the information. Usually, the case is not even visited for the purpose of giving instructions. It is no wonder that typhoid continues to flourish in the country districts and is constantly

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carried thence to the cities, sometimes in sharp epidemics, as in the one at Annapolis, to which you refer.

While I realize, Mr. Editor, that the purpose of your editorial was to call attention to the widening field for antityphoid inoculation, the great value of which has been so clearly demonstrated, I think it should be made very clear that its more general use — that is, outside of hospitals and the army — is advisable, not because sanitary science is unable to control typhoid, but because of our failure to follow the advice of sanitarians. It is much more rational for us to work for improved sanitation as a means of preventing typhoid than for the more general use of inoculation.

Good progress is being made in Massachusetts in improving water and sewerage systems under the able leadership of our State Board of Health, but practically nothing is being done, especially in the country districts, to secure efficient disinfection of the excreta of all known cases and to prevent contact infection. The infection from a case of typhoid fever may extend so far beyond the limits of the town in which it occurs that the precautions which are taken should not be a matter for "Local Option." If we must wait for each local board of health to undertake of itself efficient measures to prevent typhoid infection, it will be years, yes, centuries, before we shall have such control over the disease as has Germany with its centralized sanitary authority. The precautions to be taken by the local boards of health in typhoid should be prescribed by the public statutes of the state, just as vaccination, medical inspection of schools and many duties of local boards of health are at present prescribed, and the enforcement of these measures should be supervised by the State Board of Health. When each case of typhoid is surrounded by the same precautions that we would use for a case of cholera, there would be no need to consider the general adoption of antityphoid inoculation.

Very truly yours,

FRANCIS P. DENNY, M.D.

## THE IMPORTANCE OF HUMIDITY IN THE TREATMENT OF COUGH.

CAMBRIDGE, Dec. 23, 1910.

*Mr. Editor:* The textbooks do not lay particular stress on moisture in the air of the room in treating patients with certain respiratory diseases in which cough is a prominent as well as troublesome feature. Two cases have been brought to my attention where cough was a distressing feature which did not respond to medicinal treatment. The first case was in a child of four years who had a persistent irritant cough after an attack of whooping cough. No result was obtained with medicinal treatment. The father of the child, having expert knowledge of the importance of temperature and humidity, strung several sheets soaked in water in the room at night. This was done several nights in succession and immediate relief followed and later a cure. The second case was in an elderly woman who had "taken cold." After a few days she recovered, although she had a bothersome cough at night. This continued some time notwithstanding treatment by her physician. The physician was advised to try the above treatment, with prompt success.

I now wish to add a third case; a patient thirty years old, living in a steam-heated apratment, with a temperature of an average of 70°, with no system of humidifying the air. I treated the patient for ten days for acute laryngitis with cough a constant accompaniment, and especially troublesome at night. There seemed to be little or no result with various drugs. The temperature, on the two days when the following simple treatment was commenced, hovered around zero. I instructed the patient, who had to this time slept with windows wide open, to close them to an inch, allowing just a moderate amount of air to enter the room. The room's temperature did not exceed 72°. A basin of water and a moistened cloth were then placed in the room. No other treatment was given. This was repeated three nights and days with complete cessation of the cough.

Very truly yours,

JAMES A. HONEY, M.D.

## RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, DEC. 17, 1910.

| CITIES. | Reported deaths in each. | Deaths under five years. | CITIES. | Reported deaths in each. | Deaths under five years. |
|---|---|---|---|---|---|
| New York | 1,458 | 351 | Waltham | 7 | 1 |
| Chicago | 655 | 165 | Brookline | 7 | — |
| Philadelphia | — | — | Chicopee | 8 | 3 |
| St. Louis | — | — | Gloucester | 4 | — |
| Baltimore | — | — | Medford | 1 | 1 |
| Cleveland | — | — | North Adams | 6 | 2 |
| Buffalo | — | — | Northampton | 8 | 1 |
| Pittsburg | — | — | Beverly | 7 | 2 |
| Cincinnati | — | — | Revere | 4 | 1 |
| Milwaukee | — | — | Leominster | 11 | 2 |
| Washington | — | — | Attleboro | 8 | 4 |
| Providence | — | — | Westfield | 5 | 1 |
| Boston | 217 | 46 | Peabody | 6 | — |
| Worcester | 46 | 9 | Melrose | 4 | 0 |
| Fall River | 33 | 21 | Hyde Park | 4 | — |
| Lowell | 40 | 8 | Woburn | 3 | 1 |
| Cambridge | 31 | 7 | Newburyport | 7 | 2 |
| New Bedford | 27 | 10 | Gardner | 1 | 0 |
| Lynn | 18 | 6 | Marlboro | 5 | 0 |
| Springfield | 31 | 6 | Clinton | 2 | — |
| Lawrence | 18 | 8 | Milford | — | — |
| Somerville | 22 | 3 | Adams | 0 | — |
| Holyoke | 18 | 8 | Framingham | — | — |
| Brockton | 14 | 1 | Weymouth | — | — |
| Malden | 11 | 1 | Watertown | 3 | 1 |
| Haverhill | 16 | 4 | Southbridge | — | — |
| Salem | 10 | 4 | Plymouth | — | — |
| Newton | 11 | 3 | Webster | 3 | 3 |
| Fitchburg | — | — | Methuen | 4 | 1 |
| Taunton | 12 | 2 | Wakefield | — | — |
| Everett | 4 | 2 | Arlington | 5 | — |
| Quincy | — | — | Greenfield | 3 | — |
| Chelsea | 13 | 2 | Winthrop | 3 | 1 |
| Pittsfield | 10 | 3 | | | |

## PHYSICAL DIRECTOR (MALE).

THE United States Civil Service Commission announces an examination on Jan. 21, 1911, to secure eligibles from which to make certification to fill a vacancy in the position of physical director and assistant disciplinarian at $800 a year at the Haskell Institute, Kansas, and vacancies requiring similar qualifications as they may occur in the Indian Service, unless it shall be decided in the interest of the service to fill the vacancy by reinstatement, transfer or promotion. It will not be necessary for competitors to report at any place for examination. Their eligibility for the position will be determined upon the evidence furnished in application and examination Form No. 1312 concerning their education, training and experience. Applications for this position will be accepted only from men who are graduates of medicine.

## RECENT DEATH.

DR. CLARA A. SWAIN, who died on Dec. 26, at Castile, N. Y., was born in Elmira, N. Y., in 1834. In 1870 she went to India as a medical missionary and is said to have been the first woman physician to go to the Orient in that capacity.

## BOOKS AND PAMPHLETS RECEIVED.

Abdruck aus dem Anatomischen Anzeiger. By Prof. Dr. Karl von Bardeleben in Jena, 1910. Reprint.

Proceedings of the National Confederation of State Medical Examining and Licensing Boards. Twentieth Annual Convention, St. Louis, Mo., June 6, 1910.

Antiquarischer Anzeiger von Franz Deuticke No. 87. Wien, Germany.

Antiquariats-Katalog No. 85 von Franz Deuticke. Medizin. Wien, Germany.

La jurisprudence des tribunaux en matière de séparation de corps et de divorce et les faits d'ivresse. Par P. Juquelier, M.D., et A. Fillassier, M.D. Bruxelles, 1910. Reprint.

Andreas Vesalius, the Reformer of Anatomy. By James Moores Ball, M.D. Medical Science Press, St. Louis.

The Economic Value of Family Physician Refracting. By Leartus Connor, A.M., M.D. Reprint.

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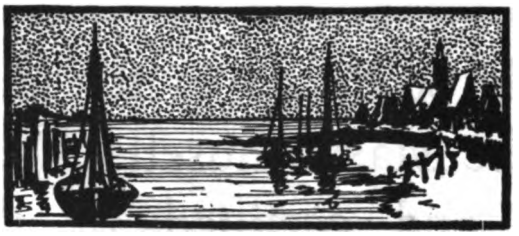

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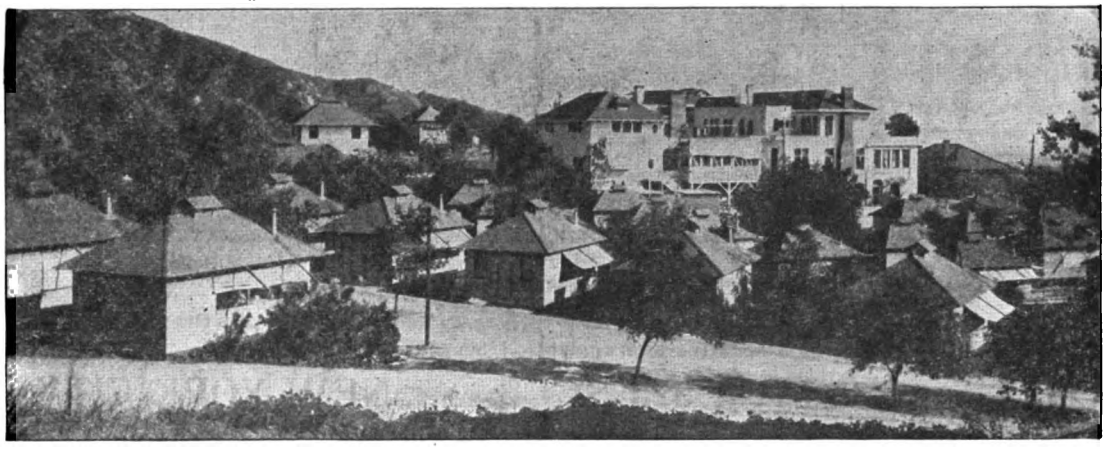

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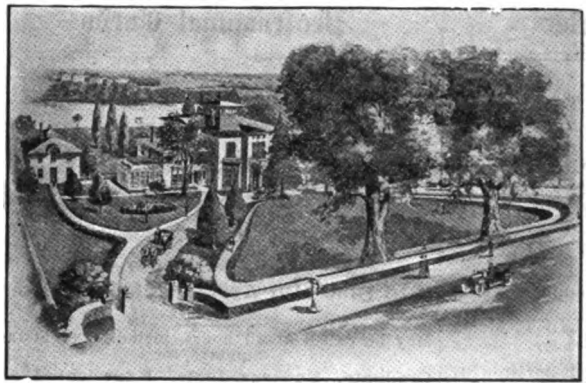

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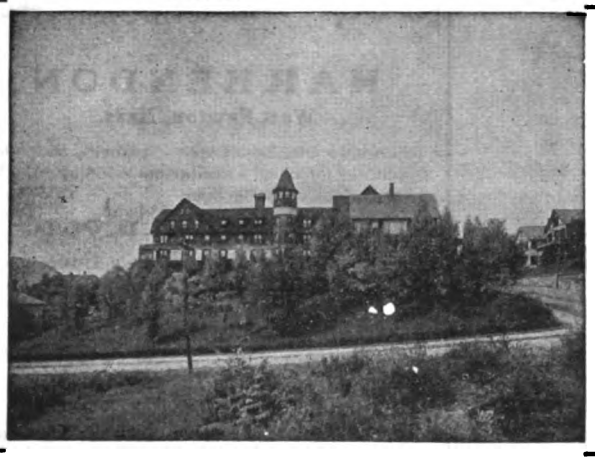

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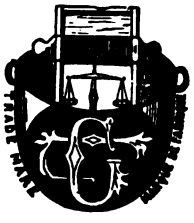

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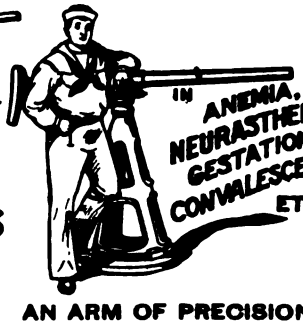


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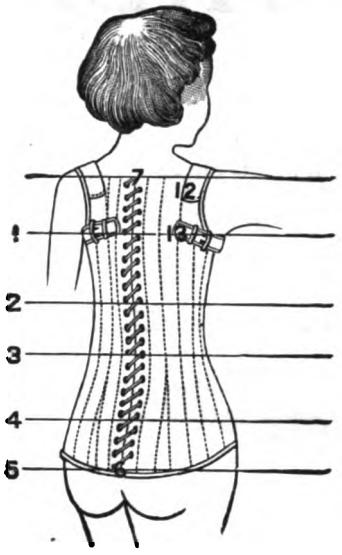


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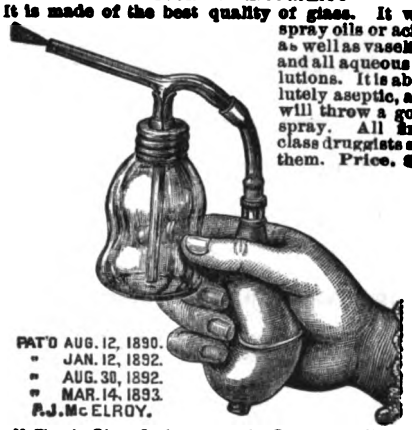


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